1952 Washington UFO Sightings • Psychic Pets and Pet Psychics • *The Skeptical Environmentalist*

# Skeptical Inquirer

THE MAGAZINE FOR SCIENCE AND REASON

Volume 26, No. 6 • November/December 2002

## The Visions of Medjugorje

## Hypothesis Testing and the Nature of Skeptical Investigations

## Intelligent Design: A Presentation Without Arguments

## Hugo Gernsback, Skeptical Crusader

## Alternative Medicine and Pseudoscience

## Are Skeptics Cynical?

Published by the Committee for the Scientific Investigation of Claims of the Paranormal

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*Throughout the 1920s and 1930s magazine publisher and "father of science fiction" Hugo Gernsback used his popular publications to fight a one-man war against pseudoscience. Virtually every issue of magazines such as* Science & Invention *contained debunking articles, tests on claims for psychic abilities and extraordinary medical devices, and offers of substantial cash awards to anyone who performs a successful demonstration*

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PHIL MOLE

Cover Credit: Mary Evans Picture Gallery

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## EDITOR'S NOTE

# *Statistical Self-Deceptions, and When History Isn't*

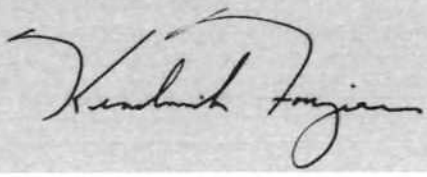
If you've ever been puzzled when researchers with legitimate scientific credentials claim near-astronomical probabilities that their experimental data showing evidence of (fill in the blank, *psychokinesis* for instance) are not due to chance, then you must read Massimo Pigliucci's article in this issue. In "Hypothesis Testing and the Nature of Skeptical Investigations" Pigliucci shows the conceptual/statistical trap that leads to so much honest self-deception when analyzing the results of such experiments with standard statistical techniques. And he clearly explains a better, more insightful way of analysis, slowly gaining acceptance in the scientific community, that instead examines the likelihoods of competing hypotheses and is much more in accord with how scientists actually think and carry out their work.

* * *

The major TV networks aren't the only ones guilty of broadcasting questionable pseudodocumentaries. A welcome recent article in the *Dallas Morning News* by Olin Chism chronicles "extravagant, scientifically suspect claims" appearing in cable "fact-TV" channels that we normally consider "educational," such as the Discovery, Learning, and History channels. One might think something called the History channel would deal only with legitimate history, but the article quotes the channel's programming chief: "You have to understand, too, that we are a commercial network governed by different rules than PBS. A reasonable rating size is important to us." He said shows such as the channel's "Haunted History" are done as entertainment, "with a little bit of a wink." The Learning Channel presented a credulous two-hour program on "Atlantis in the Andes" with little skepticism. Chism reports on some scientists' experiences of being misled by TV producers into thinking they are participating in a scientifically responsible production only to find out otherwise when it airs. Jim Underdown of our Center for Inquiry's National Media Center in Los Angeles is quoted, as are CSICOP chairman Paul Kurtz and several scientists who have written recently for SI. We all need to call more attention to the egregious nonsense these pseudoscientific TV programs promulgate unashamedly to the public. The Learning, Discovery, and History channels have an obligation to present claims and issues objectively and with some sense of critical evaluation of suspect claims, not to just titillate and entertain without regard for scientific evidence. Furthermore, the way some producers treat good scientists who honestly think they are contributing to public knowledge and who then find their words edited into a totally different context or ignored altogether if they don't support the programs' sensationalistic themes is shameful.

* * *

*Buzz-off, crackpot*—I suppose scientists and skeptics can't use this option (can we?), but who can blame Apollo 11 astronaut Edwin "Buzz" Aldrin for doing so. Aldrin, the second man to walk on the moon, with Neal Armstrong in July 1969, didn't argue with an obnoxious moon-landing-denyer and filmmaker who physically confronted him in a Beverly Hills, California, hotel and challenged the veracity of the moon landings. Aldrin punched the idiot in the jaw.

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# *Washington Post* Commemoration of 1952 UFO Sighting Omits Telling Details of Report that Explained Radar Blips

PHILLIP J. KLASS

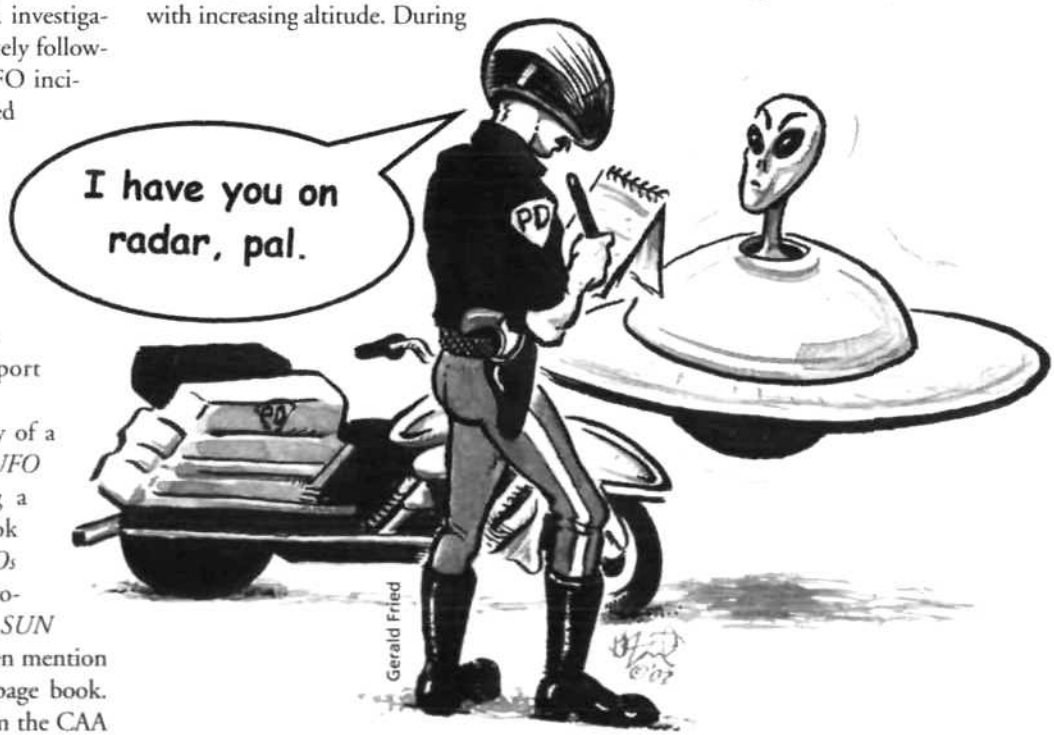
The July 21, 2002, *Washington Post* "commemorated" the fiftieth anniversary of a UFO incident that made headlines around the globe when mysterious blips appeared briefly on the primitive radars at several airports near Washington. At the time, in 1952, barely five years after UFOs first attracted national attention, there were some even in high positions who suspected that UFOs might be extraterrestrial craft. If so, perhaps they were reconnoitering the nation's capital prior to an attack. The recent *Washington Post* article by staff writer Peter Carlson was headlined "Alien Armada."

Although Carlson's article occupied nearly two pages, regrettably he opted to omit important details from a sixteen-page report on the results of an investigation by the Civil Aeronautics Administration—now the Federal Aviation Administration. During our two-hour interview I loaned him a copy of the CAA report and urged him to read or at least scan it. This CAA investigation was conducted immediately following the Washington radar-UFO incidents, but the report, issued the following spring (May 1953), is *never* even mentioned by those who believe that UFOs are ET craft because it offers prosaic explanations for the incidents. Carlson mentions the CAA investigation report only very briefly.

I also gave Carlson a copy of a recent issue of my *Skeptics UFO Newsletter* (*SUN*) containing a review of the recent book *Invasion Washington: UFOs Over The Capital*, by pro-UFOlogist Kevin Randle. *SUN* noted that Randle did not even mention the CAA report in his 312-page book. My review quoted briefly from the CAA report, which stated that mysterious blips on radar "do not represent a new phenomena nor are they peculiar to the Washington area." Thus the details of the CAA investigation and its finding would be newsworthy for *Washington Post* readers. Instead, Carlson devoted much of his article to extracts from a book published in the mid-1950s by then recently retired Capt. Edward Ruppelt, who had headed Project Blue Book, the United States Air Force's office for investigating UFO reports.

Early in the CAA investigation the logs of radar controllers were examined to list all instances of mysterious radar blips from May through August of 1952. The tabulation, contained in the CAA report, was then taken to the Weather Bureau's analysis section. "It was then found that a temperature inversion had been indicated in almost every instance when the unidentified radar targets or visual objects had been reported," according to the CAA report. (Normally, the temperature of the air decreases with increasing altitude. During temperature-inversion conditions, which often occur during the hot, humid summer months, a patch of warmer air exists at higher altitude. This causes the upward-looking beam of an airport radar to be refracted downward so it is reflected off of autos, ships, and surface objects. As the temperature-inversion conditions shift location, a surface-object's radar blip may disappear from one part of the radar's display and another may appear some distance away. If a traffic controller erroneously assumes the two blips are from the same object, he can conclude that the single object is travelling at very high speed.)

Because the Washington enroute traffic control center was the only such center then outfitted with long-range radar, the CAA investigators checked with airports equipped with shorter-range terminal area radars to determine if they too had experienced mysterious radar blips. The CAA report stated that Chicago's Midway airport had displayed unidentified targets "on many occasions,



particularly when temperature inversions had been in effect." Similar experience was reported by Cleveland's airport, and Boston's Logan airport reported anomalous blips "on rare occasions."

But the CAA investigation included observation of the enroute center's radar with data measurement. For example, on the night of August 13, 1952, the radar's Moving Target Indicator had been set to filter out (not display) nonmoving ground targets up to ten miles from the radar's antenna. According to the CAA report, "Beyond this range the scope was clear except for a few permanent echoes that were visible. Suddenly, at approximately 19:57 Eastern Standard Time (EST) a group of seven strong stationary targets became visible in an area about fifteen miles north-northeast of the radar antenna. During the next two or three antenna revolutions, the area on the scope between Washington and Baltimore became heavily sprinkled with stationary targets in a belt about six miles wide.

"A group of additional targets became visible in an area approximately ten to fifteen miles south of the radar antenna. This was evidence of the beginning of a temperature inversion. Within the next minute at approximately 19:58 EST, four unidentified moving targets showed up five miles southeast of the radar antenna and moved in a southerly direction. . . . For the next four and one-half hours, many unidentified targets were carefully plotted with grease pencil on the face of the scope. The time for each was entered on these plots in order to calculate ground speed." CAA investigators conducted several such experiments in mid-August, as disclosed in their report. "In each case, target directions corresponded with the wind directions reported aloft," according to the CAA report.

As Carlson reports in his article, when mysterious blips appeared on the Washington radars a week later (July 26–27), the USAF dispatched two F-94C interceptors from an air base near Wilmington, Delaware. The F-94C was equipped with the most advanced airborne radar and a separate radar operator to spot enemy aircraft. (The F-94C's radar operated at a higher frequency than airport radars and therefore was not as susceptible to temperature inversion effects.) When the two F-94Cs were vectored to the vicinity of the UFO blips, their radars were unable to spot any craft. When they were running low on fuel and returned to base, two more F-94Cs were dispatched to the Washington area and were vectored to the mysterious radar blips. None of the four aircraft radars detected any craft, as one of the F-94C pilots (Capt. John W. McHugo) later wrote me. In McHugo's letter he said that "One pilot reported a light but we are confident it was a motor-vehicle headlight." (I gave a copy of McHugo's letter to Carlson, who opted not to mention its content in his article.)

During both July 19–20 and July 26–27 incidents, the traffic controllers asked aircraft flying in the vicinity if they saw the mysterious craft. And a few reported seeing a very fast-moving light, which might have been fireballs from the Aquarids meteor shower, reaching its peak activity around July 29. A few other pilots reported seeing a very bright light, but the planet Jupiter (which triggers many UFO reports) was especially bright after midnight during late July of 1952.

In the concluding portion of Carlson's article, he quotes well-known pro-UFOlogist Bruce Maccabee, a Navy physicist: "Maccabee believes there were solid objects in the air over Washington fifty years ago. 'And I think those solid objects were not made by us.'. . . Like Klass, Maccabee buttresses his argument with an official government report. It's called 'Quantitative Aspects of Mirages' and it was issued by the Air Force in 1969. 'They proved in their own study there wasn't enough temperature inversion to cause this effect,' he says. 'The Washington sightings cannot be explained as a radar mirage.'"

If Maccabee had studied more carefully the report he cited, he would discover that it deals with visual mirages, and its author (First Lieutenant Frederick V. Menkello) does not even mention "radar" or the 1952 radar incidents anywhere in his report.

Carlson's article concludes by quoting former Washington traffic controller Howard Cocklin, who remains convinced that mysterious craft visited the nation's capital in 1952: "I saw it on the screen and out the window. It was a whitish-blue object. Not a light a solid form. An object. A saucer-shaped object." Presumably, mysterious blips have appeared on Washington area and other FAA radars during the last fifty years, but they have been correctly identified.

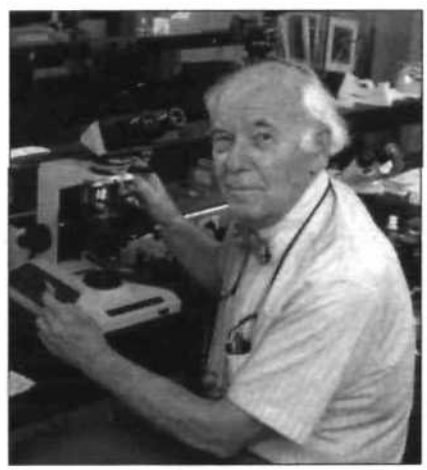
*Veteran Washington, D.C., aerospace journalist Philip J. Klass is author of numerous books critically examining UFO claims, chairman of the CSICOP's UFO Subcommittee, and editor of* Skeptics UFO Newsletter.

## Microanalytical Great, Walter C. McCrone, Dies

Walter C. McCrone—world-famous microanalyst, CSICOP fellow, and Shroud of Turin nemesis—died July 10, 2002, at the age of 86.

McCrone's distinguished career included a Ph.D. in organic chemistry from Cornell in 1942, and several years' work as a microscopist at what is now the Illinois Institute of Technology.

In 1956 he became an independent consultant and founded his now-famous



Research Associates. In 1960 he founded his complementary organization, the McCrone Research Institute, which would eventually teach more than 20,000 "students," including forensic analysts from the FBI and other crime laboratories. He also founded a similar facility in London, McCrone Scientific, and created the international journal *The Microscope*. Perhaps his most lasting contribution will prove to be his multivolume work, *The Particle Atlas*, a massive compilation of photomicrographs of various substances to aid in their identification.

Although much of McCrone Associates' work involved industrial matters, they also became renowned for their forensic expertise. For example, they were decisive in a criminal case when they matched a tiny bullet fragment, taken from the left hand of the accused murderer, with an area missing from the fatal bullet. The evidence supported the defendant's claim of a struggle, and he was set free.

McCrone's expertise solved many historical mysteries. He determined from a lock of Beethoven's hair that the composer died of lead poisoning; similarly, he found that Napoleon Bonaparte had not been poisoned with arsenic as some had theorized. McCrone discovered that the Vinland Map, purporting to show that Leif Ericson had visited America some five centuries before Columbus, had traces of anatase, a pigment not synthesized until about 1920.

McCrone was employed by art galleries around the world to authenticate—or not—various paintings attributed to old masters, but he is perhaps best known for having proved the notorious Shroud of Turin a fake. He identified red ocher and vermilion pigments and a tempera binding medium on the cloth, consistent with the reported confession of a fourteenth-century artist. For his efforts he was, he said, "drummed out" of the pro-Shroud group that had commissioned his analyses, but he was vindicated in 1988 when radiocarbon dating verified that the cloth was manufactured between 1260 and 1390.

Although he had received many awards (for example, from the American Microchemical Society in 1970 and the Criminalistics Section of the American Academy of Forensic Sciences in 1984), in 2000 the American Chemical Society honored him for his pioneering work in chemical microscopy. The society specifically cited his analytical work on the Shroud of Turin.

McCrone is survived by his wife—the former Lucy Beman whom he married in 1957—an accomplished microscopist in her own right.

McCrone's motto was at once both serious and witty: "Think small." It seems also appropriately ironic for one who will be remembered as a giant in his field.

*—Joe Nickell*

*Joe Nickell is CSICOP's Senior Research Fellow.*

## Anti-Gravity Shield Rises Again, and the Zero-Point Fringe

*The following items are from Robert L. Park's weekly electronic newsletter "What's New" (American Physical Society, Washington, D.C., and University of Maryland).*

August 2, 2002:

**Anti-Gravity: A Gravity Shield Would Be Very Nice, But. . . .** Never has an idea with no prospect for success so captivated corporate research managers who either never studied or never understood the most basic laws of physics. Both Boeing in the U.S. and BAE Systems, the British aerospace giant, are trying to make the Podkletnov gravity shield work. BAE has already been at it for two years (WN 31 Mar 00), with no success. When NASA couldn't make the Podkletnov shield work, they invested another million dollars (WN 22 Jan 99). When it still didn't work, they decided the tests were "inconclusive" and sank another million into it (WN 12 Oct 01). I have identified seven warning signs of bad science at www.bobpark.com. The Podkletnov gravity shield fits all seven. So why would Boeing choose to spend millions to test a ridiculous claim by an obscure Russian physicist that has failed every test and is a physical impossibility to begin with? Okay, so the Pentagon is paying for it. But there's also this goofy book by Nick Cook, who writes for *Jane's Defense Weekly*.

**Book Review: *The Hunt for Zero Point* by Nick Cook.** If this book is about controlling gravity, what's with the "zero point"? The confusion is natural; both lie within the province of fringe scientists who haven't a clue of where the real world stops and the fantasy world of Atlantis and UFOs begins. Cook is not a scientist of any sort; in his world, these guys are the insiders. Don't look for them in the pages of *Phys Rev;* they're not a bunch of pointy-headed academics. They are part of the black world of really important top secret stuff like—well, electrogravitics. So who

Gerald Fried

exactly fed Nick Cook this enormous pile of horse manure? If you're a regular reader of WN, you've already met them all.

**Fringe: Where Everything Is Secret, and Nothing Is Impossible.** When Cook set out on his search for "the biggest secret since the atom bomb," he went straight to the Integrity Research Institute (IRI), in Washington, D.C., where you can buy books and videos with titles like "Holistic Physics and Consciousness" (WN 5 Mar 99). IRI is really Tom Valone, a former patent examiner who lost his job in the fallout from the Conference on Free Energy (WN 21 May 99). He had recruited Paul LaViolette, who claims the B-2 uses anti-gravity, reverse engineered from a crashed flying saucer. He was also fired (WN 18 Aug 00). They sent Cook to the Institute for Advanced Study. Not the one at Princeton; the one at Austin, Texas. It consists of Harold Puthoff, who wants to extract energy from the zero point of the vacuum. He used to run the CIA's "remote viewing" program, which was inspired by *Mind Reach*, a book he wrote with Russell Targ (WN 11 Mar 94). Finally, Cook sought advice from Charles Platt, founder of CryoCare, a company that keeps human heads bobbing in liquid nitrogen until scientists can figure out how to restart them (WN 21 Jul 00).

August 9:

**Anti-Gravity: Was This the Lightweight Story of the Year?** The *Eastside Journal* in Bellevue, Washington, quotes a Boeing spokesman as saying the company is not funding any anti-gravity research (WN 2 Aug 02), nor is it attempting to duplicate Podkletnov's results. Ha! Nick Cook warned us they would say that. He would say it's just disinformation, part of the massive government coverup.

August 16:

**Cook Book: *Fresh Air* Offers a Recipe for Stale Baloney.** Two weeks ago, WN dumped as much cold water as one page can hold on the anti-gravity nonsense stirred up by Nick Cook's goofy book, *The Hunt for Zero Point*. We braced for sensational stories in the *National Enquirer* and on Art Bell, but where does Cook turn up? Gasp, on National Public Radio's *Fresh Air*. "I am not a scientist," Nick Cook admits in a brilliant understatement, "but I enlisted some help." So who did he enlist? "There are scientists working right on the cutting edge. . . . Dr. Hal Puthoff is pioneering this whole zero-point energy field. . . ." Well, there's a name we know. One of the first scientists to vouch for spoon-bender Uri Geller, Puthoff headed the CIA's remote-viewing program, and is said to have sent his own mind to explore the surface of the planet Mercury (WN 11 Mar 94). Guest host Barbara Bogaev, who also is not a scientist, asks how anti-gravity machines work? They all spin, Nick Cook explains. "Some theories say if you spin this zero-point energy field that exists all around us, some weird and magical things start popping out, one of which is an anti-gravitational effect." There you have it—an authoritative explanation on NPR.

*Robert L. Park is director of the Washington office of the American Physical Society, a physics professor at the University of Maryland, and author of* Voodoo Science.

## Houdini Reappears

Harry Houdini (1874–1926)—world-famous magician, escape artist, and paranormal investigator—has received a long-overdue accolade: his portrait is featured on a new U.S. commemorative postage stamp.

Born Ehrich Weiss in Budapest, he changed his name as a tribute to the great French conjurer, Jean-Eugene Robert-Houdin, and went on to become one of the greatest magical showmen of all times. He performed mystifying illusions and daredevil escapes, flew the first airplane over Australia, produced and starred in feature films, and became the twentieth century's premier ghost-buster—no armchair theoretician he!

The stamp belatedly honoring him was issued on July 3 in New York City, coinciding with the one-hundredth anniversary of the Society of American Magicians, over which Houdini presided for the last nine years of his life. The stamp was previously unveiled on Halloween 2001, the seventy-fifth anniversary of the great showman's death.

Depicting a confident Houdini at the peak of his career, the stamp is based on a 1911 lithographed poster. It also encodes a hidden image that seemingly enwraps Houdini in chains—an effect visible through the U.S. Postal Service's official Stamp Decoder.

The magical effect is especially appropriate for one who exposed and replicated many bogus "spirit" pictures. Houdini used his knowledge of magic to rout many fake paranormal claimants—not only spiritualist mediums but others like "the Spaniard with X-ray Eyes" and an "Egyptian Miracle Man."

Today's skeptical investigators follow in his footsteps. CSICOP even features an annual Halloween séance at which—although Houdini invariably fails to appear—his great life is honored.

*—Joe Nickell*

## Psychics Wrong About Chandra Levy

The body of missing Washington, D.C., intern Chandra Levy was finally found in late May 2002 by a man searching for turtles in Rock Creek Park. Following Levy's disappearance, thousands of psychics told police where their powers said Levy would be found (see "'Psychic Flies' Feed on Levy Disappearance," SKEPTICAL INQUIRER, November/December 2001). The sad end to her disappearance does at least provide us with the opportunity to see how accurate those psychics were.

Washington Metropolitan Police officers secure the perimeter on May 23, 2002, around the area where the remains of Chandra Levy were found in the Rock Creek Park in Washington, D.C. AFP PHOTO/ Shawn Thew

Self-proclaimed psychic Sylvia Browne told Fox News Channel's Paula Zahn that Levy's body was near "some trees down in a marshy area." Browne may need to buy some Windex for her crystal ball: The remains were found across a steep incline in a heavily wooded area—perhaps near "some trees" but clearly not "in a marshy area," since a marsh located on an incline is geographically impossible. At least Browne isn't alone in her faulty psychic powers: None of the other thousands of tips from psychics led police to her body either.

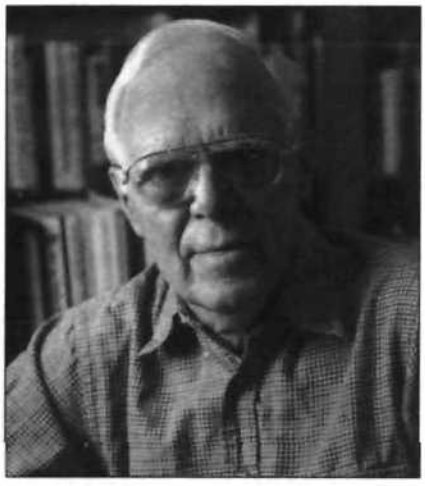
*—Benjamin Radford*

*Benjamin Radford is Managing Editor of the SKEPTICAL INQUIRER*

## Martin Gardner Donates Book Collection to Center for Inquiry Library

The Center for Inquiry–International Library in Amherst, New York, received an extensive collection of books on the paranormal, pseudoscience, and fringe religions from Martin Gardner. Gardner, considered to be one of the leading skeptics in the world, donated over 400 books and reference works and encyclopædias to the library's collection.

Each book will have a name plate in honor of Martin Gardner affixed to it. There are also extensive files and numerous articles and news clippings. Among the topics covered are creationism, Catholic artifacts, psi, mediums, parascience, and monsters, but also files on physics, chemistry, astronomy, animal talk, anthropology, and other sciences.



The Center for Inquiry Library already houses one of the largest skeptical and freethought libraries in the world. The addition of Martin Gardner's priceless collection will further enrich the Library as a research resource. The intensive process of cataloguing this important addition will get underway shortly.

*—Paul Kurtz*

*Paul Kurtz is Chairman of CSICOP.* □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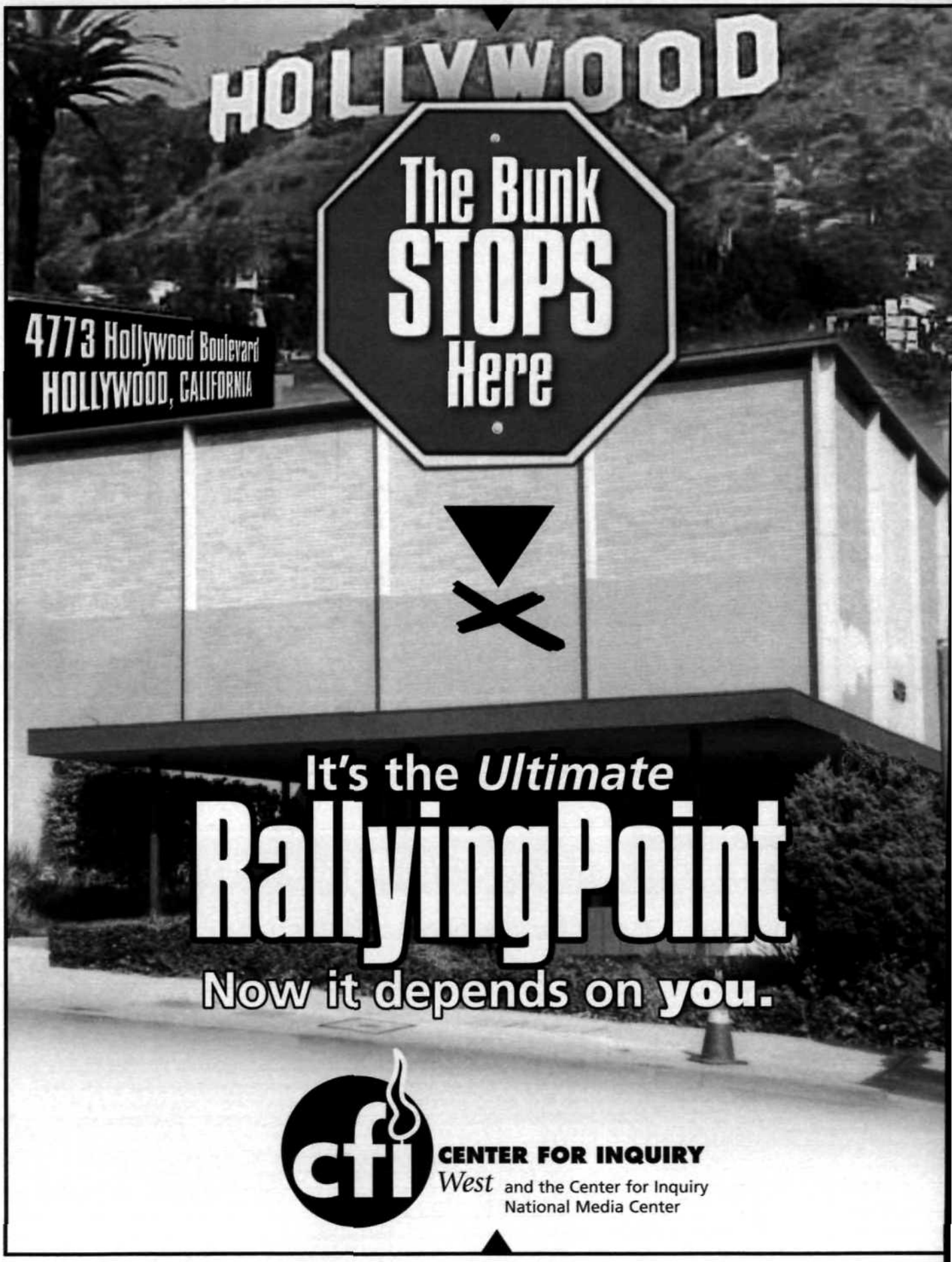
For more information, contact Barry Karr, Executive Director of CSICOP, at **716-636-1425**. All inquiries are held in the strictest confidence.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And now it's up to our readers and friends. Only **you** can help us fulfill this bold potential. Purchasing the building took $1.6 million, which we must pay back over three years. Renovation will require another $500,000 – creating a 99-seat auditorium, library, exhibit area, media production center, and offices. We're even looking into solar panels so we can generate our own electricity! An additional $495,000 will equip the Media Center and fund its first three years of operation. Finally we must add millions more to endowment, so the new Center will always be fiscally stable.

All told, we need **$5.85 million,** of which less than $2 million has already been raised. It's the greatest challenge skeptics and secular humanists have faced since our community gave more than $5 million to build and endow the Center for Inquiry – International in Amherst, N.Y., from 1991–1995.

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# Psychic Pets and Pet Psychics

Many believe that the bond between man and animals, known from great antiquity, includes extrasensory perception (ESP). They cite anecdotal evidence, controversial research data, and the claims of alleged psychics. During over three decades of investigating the paranormal, I have often encountered and reviewed such evidence. I have written about "talking" animals, appeared with a "pet psychic" on *The Jerry Springer Show*, analyzed alleged paranormal communications between people and animals (both living and dead), and even visited a spiritualists' pet cemetery. Here is a look at some of what I have found.

## "Talking" Animals

Alleged animal prodigies—various "educated," "talking," and "psychic" creatures—have long been exhibited. In seventeenth-century France, for instance, a famous "talking" horse named Morocco seemed to possess such remarkable powers, including the ability to do mathematical calculations, that he was charged with "consorting with the Devil." However, he saved his own and his master's life when he knelt, seemingly repentant, before church authorities.

In the latter eighteenth century a "Learned Pig" and a "Wonderful Intelligent Goose" appeared in London. The porker spelled names, solved arithmetic problems, and even read thoughts by selecting, from flashcards, words thought of by audience members (Jay 1986). The goose, advertised as "The greatest Curiosity ever witnessed," performed such feats as divining a selected playing card, discovering secretly selected numbers, and telling time "to a Minute" by a spectator's own watch (Christopher 1962, 35).

Other prodigies were Munito the celebrated dog, Toby "The Sapient Pig" (who could "Discover a Person's Thoughts"), and a "scientific" Spanish pony who shared billing with "Two Curious Birds." The latter were "much superior in knowledge to the Learned Pig" and "the first of the kind ever seen in the World." Such animals typically performed their feats by stamping a hoof or paw a certain number of times or by spelling out answers using alphabet and number cards (Christopher 1962; Jay 1986).

In 1904 a German horse named Clever Hans provoked an investigation into his wonderful abilities. "Learned professors were convinced," wrote Milbourne Christopher (1970, 46), "that Hans could work out his own solutions to mathematical problems and had a better knowledge of world affairs than most fourteen-year-old children." However, psychologist Oskar Pfungst soon determined that questioners—including Hans's trainer—were providing unintentional cueing. Pfungst discovered that Hans began stamping when the questioner leaned forward to observe the horse's hoof and only stopped when that person relaxed after the correct number was given. Pfungst even played the role of Hans by rapping with his hand while friends posed questions. Of twenty-five questioners, all but two gave the beginning and ending cue without being aware of doing so (Christopher 1970; Sebeok 1986).

Of course, trainers could deliberately cue their animals and practice other deceptions, such as secretly gleaning information that the animal would then reveal "psychically." In 1929, the man who later coined the term ESP, Dr. J.B. Rhine, was taken in by a supposedly telepathic horse named Lady Wonder. Rhine believed Lady actually had psychic power and he set up a tent near her Virginia barn so he could scientifically study her apparent abilities. Lady was trained to operate a contraption—somewhat like an enlarged typewriter—consisting of an arrangement of levers that activated alphabet cards. Lady would sway her head over the levers, then nudge one at a time with her nose to spell out answers to queries (Christopher 1970; Jay 1986).

Magician Milbourne Christopher (1970) had an opportunity to assess Lady's talents on a visit in 1956. As a test, Christopher gave Lady's trainer, Mrs. Claudia Fonda, a false name,

*Joe Nickell is CSICOP's Senior Research Fellow and author of numerous investigative books.*

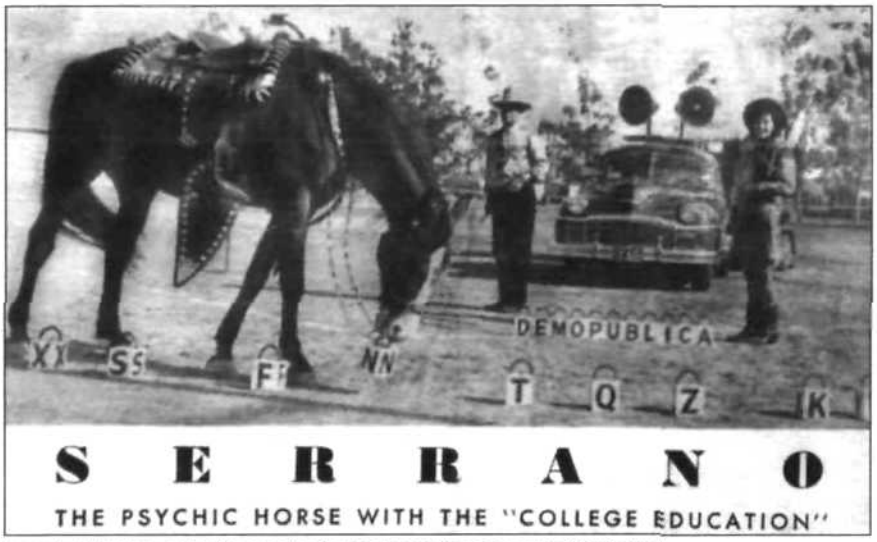
"John Banks." (The real Banks had exhibited the "talking" horse, Morocco, mentioned earlier.) When Christopher subsequently inquired of Lady, "What is my name?," the mare obligingly nudged the levers to spell out B-A-N-K-S.

Another test involved writing down numbers which Lady then divined. Given a narrow pad and a long pencil, Christopher suspected Mrs. Fonda might be using a professional mentalists' technique known as "pencil reading," which involves subtly observing the movements of the pencil to learn what was written. So he pretended to write a bold "9" but, while going through the motions, only touched the paper on the downstroke to produce a "1." Although he concentrated on the latter number, Lady indicated the answer was 9.

In short, as the noted magician and paranormal investigator observed, Mrs. Fonda gave a "slight movement" of her training rod whenever Lady's head was at the correct letter. That was enough to cue the swaying mare to stop and nudge that lever. Thus, Lady was revealed to be a well-trained animal, not a telepathic one (Christopher 1970; Nickell 1989). No doubt the same was true of her predecessors, whose exhibitors were often performing magicians.

In one case a "talking" animal was allegedly just that: a mongoose who spoke in complete sentences. Gef, as he was called, not only spoke English but many foreign phrases as well. He appeared in 1931 on the Irving farm on the Isle of Man (in the Irish Sea) but was never reliably seen. Instead, he tossed stones at unwelcome visitors, "urinated" through cracks in walls, and—although he was partial to the family's twelve-year-old daughter, Viorrey, and allegedly lived in her room, he sometimes mischievously locked her inside with a lock that, reportedly, could only be accessed from outside the room. Psychic investigators supposed Gef was a poltergeist or perhaps a ghost.

Not surprisingly, there were skeptics, including many fellow residents on the Isle of Man, who believed Viorrey was playing pranks. They accused her of using ventriloquism and other tricks, the effects of which were hyped by family members, reporters in search of a story, and credulous paranormalists. In fact, a reporter for the *Isle of Man Examiner* once caught Viorrey making a squeaking noise although her father had insisted the sound came from elsewhere in the room (*Psychic Pets* 1996, 72–83). In part the case recalls the celebrated magician/ventriloquist Signor Antonio Blitz who enjoyed strolling through a village and engaging in conversation with horses tied at hitching posts. Reportedly, he also "once discussed the state of the weather with a dead mackerel in a fish market and almost created a panic" (Christopher 1970, 49).



An early advertisement for "Serrano the Psychic Horse" (courtesy of the Skeptiseum).

## Psychic Pets

Trickery aside, what about reports of apparent animal ESP? Anecdotal evidence suggests some animals may have precognitive awareness of various types of natural catastrophes, becoming agitated before earthquakes, volcanic eruptions, cyclones, and other events. However, the creatures may actually be responding to subtle sensory factors—like variations in air pressure and tremors in the ground—that are beyond the range of human perception (Guiley 1991).

Something of the sort may explain some instances of apparent animal prescience. For example, a Kentucky friend of mine insists that his dogs seem to know when he has decided to go hunting, exhibiting a marked excitement even though they are lodged some distance away from the house. However, it seems possible that they are either responding to some unintended signal (such as recognizing certain noises associated with his getting ready for a hunting trip) or that he is selectively remembering those occasions when the dogs' excitement happens to coincide with his intentions. Another friend says he once had dogs who seemed to know when he was going to take them for a walk, but he decided he must have unconsciously signaled them (such as by glancing in the direction of their hanging leashes).

There is also considerable anecdotal evidence of animals supposedly knowing when their masters were about to suffer harm or were being harmed (Guiley 1991). The operable word here is *anecdotal*: such tales are notoriously untrustworthy. For example, they may be subject to selective recall, so that after a death, say, the deceased's dog is recalled to have "acted strangely" sometime before; other instances of the animals' odd behavior, that did not coincide with the event, are conveniently forgotten. Additional problems with anecdotal evidence include the narrator's ego and bias, memory distortion, and other factors.

Scientific tests of animal "psi" (a parapsychological term applied to ESP and psychokinesis) remain controversial (Ostrander and Schroeder 1971; Guiley 1991). Rigorous experimental

protocols designed to exclude normal explanations (such as sensory cueing) tend not to show evidence for psi. An example is the report by Richard Wiseman et al., "Can animals detect when their owners are returning home? An experimental test of the 'psychic pet' phenomenon," published in the *British Journal of Psychology.*

The researchers responded to a suggestion by Rupert Sheldrake that just such a study be undertaken, and it followed a formal test of the alleged phenomenon by an Austrian television company. That test focused on an English woman and her dog and seemed successful. Wiseman et al. (1998) conducted four experiments designed to rule out the pet's responding to routine or picking up sensory cues (either from the returning owner or from others aware of the expected time of return), as well as people's selective memories and selective matching, and other possible normal explanations.

In all four experiments the dog failed to detect accurately when her owner set off for home, contradicting claims made on the basis of the previous (Austrian TV) study. The experiments suggested "that selective memory, multiple guesses and selective matching could often have sufficient scope to give an owner the impression of a paranormal effect."

## Pet Psychics

People who are both devoted to their pets and credulous about the paranormal may easily fall prey to unsubstantiated claims of pet psychics. Some profess to treat animals' emotional problems, for example, after supposedly communicating with them by ESP or other paranormal means, such as through astrology or assistance from the seer's "spirit guides" (MacDougall 1983; Cooper and Noble 1996).

Having studied pet psychics at work—including Gerri Leigh (with whom I appeared on *Springer*) and Sonya Fitzpatrick (star of the Animal Planet channel's *The Pet Psychic*)—I find that they impress audiences with some very simple ploys. Consciously or not, they are essentially using the same fortunetellers' technique—"cold reading"—that is used for human subjects. This is an artful method of gleaning information from someone while giving the impression it is obtained mystically (Hyman 1977). After all, it is the pet owners, not the pets themselves, who "validate" the pronouncements. Here is a look at some of the common cold-reading techniques used by pet psychics.

**Consciously or not, psychics are essentially using the same fortunetellers' technique—"cold reading"—that is used for human subjects. After all, it is the pet owners, not the pets themselves, who "validate" the pronouncements.**

*1. Noting the obvious.* Fitzpatrick (2002) visits an animal clinic with a couple and their infant daughter to tell them which dog is right for their family. After the selection is narrowed to three choices, each is brought out in turn. The first is ambivalent; the second ignores everyone; and the third, Patty, greets the couple and nuzzles the child. Sonya writes her choice on a slip of paper and it proves to be the same the couple made: Patty. The audience applauds: Patty was apparently their choice too! (I know she was mine!)

*2. Making safe statements.* Fitzpatrick (2002) announces that one pooch "says" he wants to go out more often, and the dog's owners accept the assertion. Similarly, Gerri Leigh (1992) tells the owner of an outgoing little dog, who immediately licks Leigh's hand, that the animal "fears no one"; but then she quickly adds that it is "not an unconditional lover." She continues by stating that the pet is "independent" and "not a yes dog." Such virtually universal declarations are not apt to be challenged.

*3. Asking questions.* Psychics frequently seem to provide information when they are in reality fishing for it. The asking of a question may, if it is correct, credit the reader with a hit; otherwise it will seem an innocent query. For instance, Fitzpatrick (2002) asks a dog owner, "When was there someone who was with him who went away?" (Unfortunately, this is too good a hit, since the young woman seems puzzled and replies that it could have been various persons—possibly, one imagines, former boyfriends or other acquaintances.) Questioning also keeps the reader from proceeding too far down a wrong path and allows for mid-course correction.

*4. Offering vague statements that most people can apply specifically to themselves.* Alleged psychics take advantage of what is known as "the Barnum effect"—after showman P. T. Barnum who strove to provide something for everyone (French et al. 1991). They learn that people will respond to a vague, generalized statement by trying to fit it to their own situation. Thus Fitzpatrick (2002) tells the owner of a pet iguana that the creature had experienced "a move." Now most people can associate a "move" with their pet: either when they acquired it, when they changed residences, or when they left it with someone to go on vacation, etc. Thus the pet psychic was credited with a hit (never mind that she incorrectly referred to the female iguana as "he").

*5. Returning messages to animals.* People who are convinced pets give information to psychics may be willing to believe the reverse. Thus Fitzpatrick (2002) claims to give animals "messages"—for example a clarification of something by the owner—by silently concentrating for a moment.

These and other techniques help convince the credulous that pet psychics have telepathic or clairvoyant or other

powers. Some, like New York psychic Christa Carl, even claim to use these powers to help locate lost pets. Carl gained notoriety "for being called in to find Tabitha, the cat who disappeared on a Tower Air flight." Actually, my reading of the case is that Carl did not find the cat but that the cat found Carl—or rather found her owner. Tabitha was known to be hiding on the airplane and, after twelve days and thirty thousand miles of flight that engendered negative publicity and a threatened lawsuit, the airline grounded the plane so the animal could be retrieved. The cat eventually came out to her owner—and to Carl, who claimed credit. That was for supposedly helping the animal resolve a problem with "one of her past lives" and "showing her how to come out" of the plane's drop ceiling (Cooper and Noble 1996).

To find other lost animals, Carl claims she uses "visualization" to help them "find their way home." Thus, if an animal returns, Carl can claim credit; if not, she has a ready rationalization: some animals do not wish to come back and, says Carl, "I have to respect the animal's wishes" (Cooper and Noble 1996).

Some pet psychics offer still other services. For example, Oklahoma "equine parapsychologist" Karen Hamel-Noble claims to heal horses. She uses her hands to detect "the source of weakness in their energy fields"—i.e., their imagined auras—then supplies compensating "energy" from herself (Cooper and Noble 1996). However, since auras remain scientifically unproved and tests of psychics' abilities to see them have repeatedly failed (Nickell 2000), Hamel-Noble's claims require proof, not just her feelings and assertions. Perhaps the animals' perceived illnesses are merely responding to their natural healing mechanisms and the medical treatments Hamel-Noble provides them—including penicillin injections (Cooper and Noble 1996).

## Pet Mediums

In the popular imagination, animals, like their human counterparts, may continue their existence after death, there being many reports of animal apparitions. And since pets are loved and often regarded as members of a family, it is not surprising that people occasionally experience "visitations" from their departed animal friends just as they do their human ones. However, these seem to have similar explanations to those of other apparitional experiences. For example, some who hear a dog's phantom bark or footsteps, or see (as one reported) "a shadow jump up on the bed," do so just after rousing from sleep (Cohen 1984) and may thus be having "waking dreams." These are common hallucinations that occur in the twilight between being awake and asleep and exhibit content that "may be related to the dreamer's current concerns" (Baker 1990). Similarly, apparitions that are seen during wakefulness tend to occur when one is tired, daydreaming (perhaps while performing routine work), or the like (Nickell 2001a, 291–292).

With the advent of spiritualism—the belief that the dead can be contacted—certain self-styled "mediums" began to offer themselves as intermediaries with the spirit realm. Some produced bogus spirit "materializations" and other physical phenomena, but these were frequently exposed as tricks by investigators like magician Harry Houdini. Today's mediums tend to limit themselves to purely "mental phenomena," i.e., the use of "psychic ability" to obtain messages from "the other side."

Such mediums—like James Van Praagh, John Edward, Rosemary Altea, George Anderson, and Sylvia Browne—appear to rely largely on the old psychics' standby, cold reading. In fact Edward (real name John MaGee Jr.) came to mediumship as an erstwhile fortuneteller at psychic fairs and now styles himself a "psychic medium." But on *Dateline NBC* he was caught cheating: attempting to pass off some previously gained knowledge as spirit revelation (Nickell 2001b).

Mediums like Edward and Van Praagh occasionally mention a pet—usually a dog—in a reading. Given the Barnum effect (discussed earlier), this usually gets a hit. For instance, on *Larry King Live* (February 26, 1999), Van Praagh told a caller: "I'm also picking up something on a dog. So I don't know why, but I'm picking up a dog around you." Note the vagueness of the reference—not even an indication of whether the animal is dead or alive or what link it might have to the person. But the caller offers the validation, "Oh, my dog died two years ago."

**If an animal returns, Christa Carl can claim credit; if not, she has a ready rationalization: some animals do not wish to come back and, says Carl, "I have to respect the animal's wishes."**

Some pet psychics, like Christa Carl, conduct "séance readings" for animals who have "passed over." Asked to give an example of such a séance, she replied (in Cooper and Noble 1996, 102):

> Brandy, a dog, had been placed in a kennel by her owner when she got married. She broke away from the kennel and got killed.
>
> Her owner called me and told me she was having a hard time and wanted to communicate with Brandy. When I did the reading with Brandy, I learned from her that she didn't know why she had been put in the kennel. She had felt abandoned, unloved, uncared for.
>
> Her owner should have told her ahead of time why she needed to put her in a kennel. I explained it to Brandy, and now she's at peace.

*PSYCHIC PETS AND PET PSYCHICS*
*Continued on page 18*

# The X-Planet: The Truth is Nowhere in Sight

Get ready for the end of the world once again. In the past few years, the world has been ending with alarming regularity, and the coming year promises to be no different. We have survived the Y2K crisis, the planetary "alignment" of May 2000, exotic calendars reaching the end of their rope, etc. However, none of the cosmic disasters we have narrowly escaped could possibly prepare us for the threat of a planet of enormous size hurtling our way at breakneck speed, preparing to scramble up Earth, shift its poles, and wipe out an estimated 90 percent of its population. Worst of all, our astronomers don't know a thing about *this planet—we have to rely upon channeled* messages from the Zetas for what pitifully meager warning we have on this looming planetary disaster.

The Zetan representative on earth is Nancy Lieder (she doesn't like to use her last name). Since 1995 she has been publishing on the Internet something called "Zeta Talk," which has easily become the single most widely ignored topic in any science-related newsgroup. (Fortunately it's all archived on www.zetatalk.com). Soon Nancy was famous, or infamous, depending on your opinion of the messages from the Zetas. Since fools are ever eager to rush in where wise men fear to tread, Nancy has developed quite a following with her prolific Internet presence and her many media appearances (see www.prep2003.com)—especially since Art Bell featured Nancy and her Zeta Talk on his wild-and-woolly all-night radio show.

**Nancy's record as a prophet is not a good one. When the discovery of the giant comet Hale-Bopp was announced in 1995, Nancy proclaimed that it didn't exist.**

Nancy says that she became a "contactee" of the Zetas in 1993, when she "recovered" the memory of an alien encounter that had occurred when she was a young girl. The Zetas supposedly come from the Zeta Reticuli star system, widely believed by UFOlogists to be the home system of the aliens that allegedly abducted Betty and Barney Hill in 1961. The Zeta messages warn earthlings about the arrival of a body alternately called Planet X, or the twelfth Planet (a calamitous, meandering solar system body first hallucinated by Zecharia Sitchin), although it is actually a giant comet. This planet, or comet, is inhabited by two intelligent races: hominoids, and reptilians. "The giant hominoids on the Twelfth Planet to this day dress in attire reminiscent of Roman soldiers," says Nancy. This is because the Romans actually copied the aliens' attire. This "planet" supposedly is in a long, elliptical orbit around two bodies, one being the Sun and the other being some object we haven't yet discovered. Its orbital period is a leisurely 3,657 years. When it arrives in the vicinity of Earth, it will cause a "pole shift." "Prior to the shift, the Earth slows in its rotation, and actually stops," an idea that either Nancy or the Zetas evidently borrowed from Velikovsky.

As far back as 1995, Nancy claimed that "The Twelfth Planet is now visible to the human eye, though only the educated eye would see it. At the current time the Twelfth Planet is approximately magnitude 2.0 in brightness" (about the same as the familiar stars in the Big Dipper). Nonetheless, the world's astronomers somehow failed to notice this bright interloper, probably because "the Twelfth Planet, to you, is camouflaged against the night sky."

The Comet-Planet's close approach to Earth is scheduled for about May 15,

*Robert Sheaffer's World Wide Web page for UFOs and other skeptical subjects is at www.debunker.com.*

2003, with the pole-shifting Doomsday to occur a few days later. There is apparently some uncertainty in the calculation because as Planet X approaches us, "the Repulsion Force clicks in at the edge of the Solar System." This, Nancy explains, is the force that keeps the outer planets from falling into the Sun. Our earthly physicists haven't yet learned about the Repulsion Force.

In case you're worried about what is going to happen to the region in which you live, Nancy provides a great deal of detailed information specifying the nature of the doom that awaits you. Most of Mexico will fare tolerably well, at least when considering the global destruction occurring in most other places. However, "California anticipates being inundated, due to the very famous Edgar Cayce predictions along those lines." Its residents might be well advised to head for Arizona, which "is situated on old land, plates that have survived numerous pole shifts without fracturing." Along the east coast, "continental rip" will occur along the entire length of the Atlantic, resulting in huge tidal waves. Residents of New York State will be okay, so long as they remain at least 100 miles inland. As for India, its unfortunate inhabitants can expect to be "forced under the Himalayan highlands." The new North Pole will end up in what is now the South Atlantic, just off the coast of Brazil.

Supposedly Planet X is now visible to professional astronomers at observatories, although a conspiracy is afoot and the U.S. Government is suppressing Planet X sightings in every way it can. She claims that the planet (or, sometimes, comet) has been photographed many times.

Certain astronomical photos on the Zeta Talk Web site are alleged to show Planet X. However, given the very limited information that she provides, plus the absence of side-by-side identical photos taken at different times, it is impossible to determine if the little dot being triumphantly pointed to is a planet, a star, an asteroid, or a photographic defect.

Fortunately, Nancy's record as a prophet is not a good one. When the discovery of the giant comet Hale-Bopp was announced in 1995, Nancy proclaimed that it didn't exist. The announcement of that comet was, she said, part of a disinformation campaign to distract people from Planet X and the coming doom. Although the bright comet was seen by much of Earth's population, Nancy, like the proverbial churchmen confronted by Galileo's telescope, refused to look because it could not and did not exist. While it would seem that the very notion of this "Planet X" is self-debunking, anyone who still isn't convinced can find more than enough refutation on the Bad Astronomy Web site at www.badastronomy.com/bad/misc/planetx/index.html. One wonders what Nancy and her Zeta friends will have to say for themselves next June?

* * *

When most organizations hold a seminar, they typically choose a location such as a major hotel or a university. But the Unification Church of the Reverend Sun Myung Moon has pioneered the use of the most amazing conference venue yet devised: the Spirit World. From February 3 to April 11, 2001, Ms. Young Soon Kim, a Unification Church leader in South Korea, held "Seminars in the Spirit World with the Four Religious Founders."

Confucius was the first to speak. He explained that he has learned a great deal since he first arrived in heaven and began having conversations with God. As a result, he has had to make some significant changes to his religious philosophy: "In order for us fallen people to be restored from the original sin, our lineage has to be changed. Reverend Moon is the instrument for this transition; through his ministry we can be restored to the originally intended state of human beings." Next Jesus spoke to the people of earth. He explained, "I came with the mission of the Messiah in the New Testament, but people at that time crucified me. That is why there remained a task for God to fulfill, and the necessity

**"The giant hominoids on the Twelfth Planet to this day dress in attire reminiscent of Roman soldiers," says Nancy.**

of a Second Coming. . . . Reverend Sun Myung Moon is the returning Messiah for whom you have been waiting and waiting. He inherited my mission at the age of sixteen." Then it was Buddha's turn. He, too, had found a need to revise his religious teachings since ascending to the spirit world, but he sought to allay the fears of his current supporters: "Dear Buddhists, I am not saying that your way of life thus far has been wrong. Like Jesus, in my time I also did my best to guide humankind in the right direction. However, with the passing of time, the tasks needed for the salvation of humankind have changed. . . . In this age Reverend Sun Myung Moon is the Buddha for whom you have been waiting." The last of the Big Four to speak was Muhammad, who told his followers, "Now God's basic desires are to bring the truths and doctrines of all religions together and unite them as one. When it is done, God can finally rest. After countless days of waiting, God finally sent Reverend Sun Myung Moon for this purpose." Putting in cameo appearances toward the end of the seminar were Socrates and Saint Augustine, both of whom emphasized the importance of following the teachings of the Reverend Moon.

From August 27 to November 12, 2001, Ms. Young Soon Kim went back into the Spirit World a second time to conduct a "Seminar in the Spirit World for 120 Christians Who Illuminated History." Among those speaking were Jesus' twelve disciples, fifteen patriarchs of the Old Testament, and numerous other major religious leaders including St. Paul, Martin Luther, John Wesley, Joseph Smith, and many others. All of them have become followers of the Reverend Moon since arriving in heaven, and emphasized the urgency of following his teachings.

From April 18 to May 9, 2002, Ms. Young Soon Kim went back to the Spirit World yet once more, to conduct a "Seminar in the Spirit World for 120 Communists" who during their lifetimes had been leaders of that atheistic and materialistic movement. Without exception, all of them had discovered after death the error of their ways, and expressed full support not only for religion in general, but also for the True Parents (Mr. and Mrs. Moon) and their mission to unify the religions of the world. For example, Karl Marx said, "I, Marx, have met God. I have found that He is the Parent of humankind. . . . Reverend Sun Myung Moon, who is on the Earth, brought this fact to light." Marx' sidekick, Freidrich Engels, added, "You people on the Earth! Please attend God and receive Reverend Moon's guidance." Lenin, equally regretful of the error of his ways, proclaimed, "Please receive the thought of Reverend Moon and study it deeply. If you do so, you will attend God more truly than the thinkers or politicians of the Free World." Mao Tse Tung now has very different things to say than what is in his Little Red Book: "God exists and the spirit world clearly exists. Reverend Moon, True Parents, who illuminated the truth that God is the Parent of humankind, please save our Communist people."

While some may dismiss channeled transcripts on obscure Web sites (www.tparents.org) as insignificant and perhaps unrepresentative of the teachings of the Unification Church, that organization was so eager to promote the endorsements of Jesus, Martin Luther, Marx, and Lenin that it took out a full-page ad in the *Los Angeles Times* on July 8 to brag about it. Most impressive of all was a concluding Letter from God himself, endorsing the Moon mission: "I am the God of all people. You, the True Parents, have now succeeded in everything and have raised everything to its true level. So you are now the Savior, messiah and King of Kings of all of humanity!" Somehow this message from God neglected to chastise the Reverend Moon and remind him that, in virtually every other religion, humility is considered to be a virtue. □

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## *Psychic Pets and Pet Psychics*

*From page 15*

Of course, there is not the slightest bit of evidence that the spirit was contacted or that, in fact, it existed anywhere other than in the imagination of Christa Carl and, of course, the dog's grieving, guilt-ridden, and credulous owner.

Such seems invariably the problem with claims involving psychic pets and pet psychics. Based on anecdotal evidence—wonderful tales of psychic and mediumistic success—they are not supported by scientific investigation.

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# The Search for Margery

While researching material for my book *Final Séance: The Story of the Strange Friendship Between Houdini and Conan Doyle* (Prometheus Books, 2001) I made several attempts at locating some of the relatives of the medium "Margery," whose role was so prominent when Houdini and Doyle were friends and later enemies.

Margery (Mina Crandon was her real name) was the wife of Dr. LeRoi Goddard Crandon, a wealthy Boston physician, who, in 1924, entered the contest announced by *Scientific American* according to which $5,000 would be paid to anyone able to demonstrate psychic powers under scientific controls. The only catch was that Houdini was a member of the committee, and that proved to be enough to scare away most tricksters eager to win the prize by any means.

I knew that Margery had a son and that he was probably still alive, but though I tried many times to contact him I was never able to get a reply. The deadline for the book finally came and I closed it without the information I wished to include.

Then, in March of this year, I received an e-mail from an Anna Thurlow, who introduced herself as Margery's granddaughter. She was writing me because she had read a review I wrote for the SKEPTICAL INQUIRER on Ken Silverman's book on Houdini (SI 21(3), May/June 1997). She thought the book was "superb" but wanted to "point out, though, that it was not ever proven that Mina provided 'sexual favors' to members of the séance circle. Ken is careful to point this out himself. Bird [Malcolm Bird, secretary of the *Scientific American* Commission] later made that claim, but I would argue that a man desperate to salvage his own reputation and is willing to do so by commenting on such personal matters is perhaps not the most trustworthy source of information."

I was quite excited to get a chance to speak to someone who had had Margery as grandmother and I thought it would be very interesting to hear the perspective of a member of the family who was not as involved in the case as Dr. Crandon. To me it looked almost as if, eighty years later, the contemporary "representatives" of Margery and Houdini had a chance to meet and discuss what went on during those famous séances in Boston. So, imagine you could step back in time and listen to a conversation between two people who could have been "very close" to those two giants.

**Massimo Polidoro**: Anna, I must say that I am an admirer of Margery and I think that the idea of her faking the phenomena was probably more a matter of a difficult relationship with her husband than an attempt to deceive the public. What do you think?

**I made several attempts at locating some of the relatives of the medium "Margery," whose role was so prominent when Houdini and Conan Doyle were friends—and later enemies.**

**Anna Thurlow**: Please, do not feel any anxiety over offending me regarding whether she was "authentic" or not—I do not believe in supernatural phenomena. I am, however, fascinated with the pageantry and ritual of it. I know that for whatever reason she started it (and I agree with you, I do not think it was with intent to deceive but rather for reasons more psychologically complex), it conquered her mentally in the end—after Dr. Crandon died (even though he was my great-grandfather, we've always called him "Dr. Crandon") she

*Massimo Polidoro is an investigator of the paranormal, author, lecturer, and cofounder and head of CICAP, the Italian skeptics group.*

continued automatic writing on her own, as if it was the only company she had, which I find very sad.

**MP**: Did you have a chance when you were a kid to know Mina personally?

**AT**: I never knew Mina, nor did my mother, as Mina drank herself to death so early on. But my grandfather John Crandon (Mina's son and my mother's father) was greatly influenced and shaped by her. He was a very unhappy man and both obsessed with and ashamed by her. She was rarely spoken of in the family but my mother gathered many stories and passed them on to me. I've been worried about the veracity of the stories, but where I've been able to verify them, they've turned out to be true. More immediately, however, the psychological impact of my greatgrandparent's dysfunctionality and the conflict with Houdini was deeply imprinted on the family.

**MP**: Is John still living?

**AT**: Yes, my grandfather is still living although not mentally competent; even before, however, he rejected anyone's attempt to contact the family—which is why you wouldn't have been able to find any of us. My mother, on the other hand, was fascinated by Mina and was preparing to write a book about women, spirituality, and class in Boston, with Mina as the central figure. My mom died of cancer in 1995, just before Ken's book came out—she would have been thrilled to read it, as he uncovered so much more than we knew. I've been very grateful to him for answering so many of the questions that my grandfather never would. There is only myself and my mother's brother.

**MP**: It must not have been easy for a kid like John, your grandfather, to live in a house were all those strange things went on. What did he think about his mother's fame?

**AT**: It made my grandfather very angry to talk about Mina (the Rand side of the family only knew her as Mina, people outside of the family or Houdini specialists always refer to her as Margery; my mother and I refer to her as both). I asked him several years ago what he thought about the whole thing, and he said that he knew when she started the séances that something was not right with her, mentally. However a few minutes later he turned to me and said in a way that made my hair stand on end: "They didn't know what they were playing with. It was a very dangerous game." His room at 10 Lime street was right next to the séance room, and he could hear everything. They locked him in every night (as well as the servants) to prove to the sitters that the séance circle was controlled. I think he was around twelve years old. So I imagine, for him, however much a rationalist he was, it must have nonetheless been absolutely terrifying. Seeing him re-live that was chilling enough for me to not ask again. My mother told me that the public outcry on this arrangement was such that Mina had to send my grandfather away; which they did—to Andover (a boarding school). When I asked him once about how it was done, he said, "mirrors." But he didn't explain more than that.

**MP**: Did you have other chances to talk about Mina with John?

**AT**: I've asked my grandfather about Mina over my whole life, but he really didn't like to talk about it. The conversation I relayed to you took place in 1997, I think, just before he really slipped mentally; he must have been in his early eighties, and I was in my late twenties. The question about the mirrors was the same day—I asked him if he believed in it (no) how they did it (mirrors) and how he felt about being in the room next door (wouldn't say). He was very rattled and the nurse told me that he had nightmares all that night. Sid Radner (of the Houdini séances) was very interested in talking with him, but after that, I really felt that he couldn't remember enough for it to be worth the emotional turmoil it obviously caused him.

**MP**: Dr. Crandon died in 1939 and Mina in 1941, however we know that she went into depression and drank quite heavily. What were those two years alone like for her?

**AT**: After Dr. Crandon died Mina had an affair with their lawyer, Mr. Button, and I believe she moved in with him in New York City. However, my mother and grandmother (my grandmother was rather horrified by the whole thing and never really knew how to handle Mina) always hated him. I am not sure why but I think my grandfather felt Button stole her money or he otherwise took advantage of her. Button certainly supported her continued "experiments" so I wouldn't be surprised if he was hoping to recreate some of the notoriety of before. However, I haven't found a thing about him that confirms that he was a bad person, so I have to reserve my judgment. But Mina did drink herself to death by her early fifties (although the toll of drink and depression, as I gather, made her seem much, much older). But yes, my grandfather was terribly ashamed of her, as I think most children of alcoholics are, even without having had the whole world know very intimate things about her. By the time she died, my grandfather was already married.

**MP**: Could this Button you are referring to be W.H. Button, the then-President of the American Society for Psychical Research?

**AT**: You are right! I was shocked to realize that he was the head of the ASPR—my mother had thought he was a lawyer. All of the papers I have from later in Mina's life were archived, sorted, and stored by him—the envelopes all have his name and address on them. I am now curious as to what date he starts the archiving as opposed to Dr. Crandon. I never really thought about it, but Dr. Crandon's papers seem to peter out around 1926 (presumably around the time that Dr. Crandon no longer believed in Margery?) even though he didn't die until 1938. I wonder if Button "took up the cause" and perhaps that is how Mina and he became involved with each other. She moved to New York to be with him. Coincidentally, she lived on W. 116th street, and of course Houdini had lived on W. 113th street. My mother and I also lived on W. 113th street for almost fifteen years, only two blocks away!

**MP**: Since you are talking about houses: While on my search for material and information for my book I went to Boston and tried to locate the house where Mina lived and where the famous séances with Houdini and the *Scientific American* team took place. However, due also to time constraints, I was not able to find it. Does the house still exist, I wonder?

**AT**: Yes, 10 Lime street is still there. I have written to the owners to ask if I could meet them but they've never responded. My mother was born there and I'd like to see it for personal history, but no luck. I am dying to find out if they found any secret passages, etc. As an interesting note, the photo of her most often reproduced (standing in a doorway) was actually of the building next door. 10 Lime doesn't have a recessed doorway. I understand that the photo was taken by Houdini, and I saw a note somewhere asking

him to keep that fact rather secret, for fear of their "reputations"—I presume to keep it a secret that they actually got along long enough to take a picture! I do suspect that they were quite similar in the aspect of having been hard working class and yet outsmarted a lot of very self-satisfied people. Plus they each had some aspect of themselves that society used to dismiss them—he being Jewish and her being female. Neither of which were qualities held in high value by many of the participants, from what I can tell. . . .

**MP**: Was Houdini and the *Scientific American* investigation ever talked about in your family?

**AT**: I didn't know anything about the *Scientific American* episode other than it had been a scandal, until I read Ken's book. Houdini was a respected name in the household but his name also held a great aura of sadness and shame. I remember my mother telling me that when the *Boston Globe* stated that Houdini announced her to be a fraud, my grandfather went out and bought all of the newspapers so that Mina wouldn't read it. While I agree with Houdini that one can only explain the séances as a combination of theater and audience participation, the séances he was at were pretty simple. I would really like to know how they managed the more complicated séance events. I also don't feel that Houdini was quite up front himself—he seemed to be playing his own games. However, he was treated terribly by Dr. Crandon and some of the others and that pretty much entitles Houdini to act however he wanted, to my mind.

**MP**: *You said that after 1926, Dr.* Crandon presumably no longer believed in Margery. What do you think of him? Did he help her in some of her trickery or was he really a complete believer?

**AT**: I think Dr. Crandon must have been convinced of the experiments—I don't think anyone can write so consistently to intimate friends for so many years and have it be a lie. I think that Conan Doyle (whose friendship was dearly valued by my *greatgrandparents) and Dr. Crandon* truly thought they were foraging at the frontiers of science, as strange as that seems now. . . . I take Bird's testimony regarding a sexual relationship with a grain of salt. He strikes me as a rather charming but unbalanced and not entirely trustworthy person—tragic, too—as he disappeared (from what I know) after all this . . . probably not a person it would be wise to get too intimately involved with. Would she even dare get involved with such a person, if her highest priority was to keep Dr. Crandon happy? Of course, relationships do not always make sense, but Bird sets off alarm bells even for me, eighty years later.

**MP**: As with many of those who have studied the Margery story and the *Scientific American* investigation, you don't seem to have a great opinion of Malcolm Bird.

**AT**: I think he was a rather duplicitous person himself. He basically moved into 10 Lime street, and I suspect may have been given money by my great-grandparents (although I can't prove that—there is just a reference to a blank check to him from Mina, to which he teases her: "what would it look like if certain people saw this?") and there may have been plenty of personal reasons for them to all grow quite tired of each other's company. I find, however, I am quite curious to know what happened to him. He strikes me as a rather sad person as well, not quite able to handle the demands of the situation he found himself in . . . although I suppose the situation got the better of most of the participants. . . . By the way, the picture in your book of Mina in the doorway is the picture I was referring to earlier. I believe it was taken by Houdini and she asked him not to reveal that fact (a collector at one of the Houdini séances showed me the same picture and told me Houdini had taken it, and I have a copy of a letter from Mina asking Houdini not tell anyone he was the one who took pictures of her). It is of her standing in the doorway of 11 Lime, not 10 Lime.

**MP**: On reading about the story from some of the original documents, what do you think now of Dr. Crandon's role and character?

**AT**: I'm pretty sure I know what Dr. Crandon's problems at the hospitals were—women. He was a philanderer. I suspect that in combination with too many sexual escapades with the female staff, he was argumentative with his peers. Plus I think Ken Silverman may have mentioned that Dr. Crandon was not as wealthy as he appeared to be. This also makes sense to me, as he had several previous wives and was likely to have some financial pressures on that end, which may have complicated things. There have been disappointments for me in learning more about my greatgrandfather; he was a racist and a sexist. (My grandfather inherited those traits. However the both of them hid it fairly well under the veneer of upperclass manners and propriety, but *when pushed or angered, you can see* it, and it is ugly.) But there have also been two things of which I am surprised to say I am rather proud: one, he was staunchly atheist and did not let social mores pressure him into believing certain things —I believe his belief in spiritualism to be genuine, and to be based in a combination of hope and science, but not in religion. That must have made his disappointment later all that more devastating. The second thing I am proud of him for is mentioned in your last chapter. I don't know that he assisted women with abortions for a fact, but I had heard it before, and it makes sense to me, and I am proud to think that one of my ancestors did something like that gave women more autonomy over themselves, particularly in a time when women had so few choices. Sexism I find not an absolute quality but exists by degrees, and although I think he thought of women as less capable than men, I think he also thought women should have some autonomy over their bodies or minds. To his credit, he warmly welcomed my grandmother into the family—a doctor herself, and the only woman to graduate from McGill Medical School in 1939.

**MP**: Thank you for sharing with our readers your very interesting thoughts and comments on one of the greatest historical figures in the history of psychical research. □

**When the *Boston Globe* stated that Houdini announced Margery to be a fraud, my grandfather went out and bought all of the newspapers so that she wouldn't read it.**

# Politicizing the Virgin Mary: The Instance of the Madonna of Medjugorje

*Apparently individual experiences of the paranormal can, on some occasions, be shown to arise largely out of the broadest social forces, including even those that result in cross-national warfare.*

RAYMOND A. EVE

We live in days of all too obvious tension and occasional outright slaughter between specific Christian nations and certain Muslim ones. With this in mind, we can point to an instructive example of how a similar conflict that has occurred on a somewhat smaller geographical scale can be used to demonstrate that paranormal beliefs sometimes arise from a symbolic conflict between differing religious and ethnic groups. We can further demonstrate how such paranormal beliefs frequently both derive from and add to tensions associated with outright warfare and attempts at ethnic cleansings. To substantiate these claims I examine the case of the widely claimed apparitional appearances of the Virgin Mary in the former Yugoslavia.

## Sources of Pseudoscientific Belief

The literature on paranormal belief is dominated by the view that such beliefs typically arise for highly idiosyncratic reasons, or at least from mistaken or bizarre thought processes. For example, Singer and Benassi (1981) have suggested that paranormal and pseudoscientific beliefs arise from common errors in human reasoning (such as those studied by learning psychologists examining errors of perception that seem to have their origins hardwired into the human brain). Singer and Benassi further identify sources of pseudoscientific belief as arising from poor or erroneous science education (see Eve and Dunn 1988; Gray 1987; etc.) or from erroneous or sensationalistic media coverage of science (Harrold and Eve 1987).

However, Singer and Benassi do, admittedly, suggest a fourth category: socio-cultural factors. It is this category that I wish to emphasize here. Pseudoscience arising out of socio-cultural forces is unique in that rather than representing bizarre or deviant thought processes, it is actually reflective of cognitive and heuristic conformity to the mode for one's reference groups. It seems likely that most research into sources of paranormal beliefs have examined individuals or small groups (such as cults). I do not mean to suggest that there has not been a small proportion of studies that have examined the etiology of beliefs at a more "macro" level. For example, a number of studies have shown definitively that belief in creationism is significantly correlated with factors such as denominational affiliation, regionality within the U.S., gender, and other sociological factors. However, even these studies have for the most part been confined to examining major social trends within but a single country at a time.

Apparently individual experiences of the paranormal can, on at least some occasions, be shown to arise largely out of the broadest social forces, including even those that result in cross-national warfare. We are all children of our own times, and as such our conscious and rational mental processes *tend to reflect the dominant cognitive and social paradigms* of our times and our home nations. So too, even our apparently idiosyncratic hopes, fears, and subconscious compulsions tend to have their roots in the overall social fabric of everyday life. The phenomenon of the "Madonna of Medjugorje" is a good example.

Medjugorje is a village located in the former Yugoslavia. It first came to my attention in 1985 while I was standing in a tube station in the Bloomsbury district of London looking at a huge paper advertisement on the wall. The advertisement asked the reader to "Dial Mary" and came complete with a toll-based long distance number. Callers could receive the benefit of daily communications as imparted by the Virgin Mary, who apparently channeled her invocations through several children in Medjugorje. Since 1981, the six young visionaries (Ivanka, Ivan, Jakov, Marija, Mirjana, and Vicka) had been experiencing nearly daily episodes of apparitions and communication with "Our Lady."

The overall result has been that since the 1980s, Medjugorje has attracted pilgrims from all over the world. It is

not an exaggeration to state that tens of millions of the Catholic faithful and other seekers have made Medjugorje a Catholic shrine that exists nearly on an equal footing with the Vatican. The good news is that the Madonna's messages as received through the children almost always encourage peace and love in the world. The bad news is that a number of much darker and less noble currents circulate just under the surface.

My purpose here is to examine some of these undercurrents, and try to draw some overall conclusions for a skeptical analysis of the origins of paranormal belief systems.

## The Historical Context of Medjugorje

The events of recent decades in Medjugorje both follow and lead in a tradition of similar appearances of the Virgin. In Portugal in 1917 a series of apparitions by the Blessed Virgin occurred in the rural village of Fatima. Like the case of Medjugorje, the appearances were in a rural area and experienced by children, and the initial appearances were to become intensely politicized in the months that followed. An earlier

This 1917 file photo shows the three Portuguese shepherd children Lucia Dos Santos (C) and her cousins Jacinta (L) and Francisco Marto. The Virgin Mary was said to have appeared to the children in 1917 and given them three messages—one about the end of WW I, one other about Russia, and a third "secret" that the Vatican never revealed. Francisco and Jacinta died in 1919 and 1920, and Lucia is a 93-year-old nun. Pope John Paul II beatified Jacinta and Francisco in May 2000 during his visit to Fatima. Agence France Presse.

and possibly less well-known instance of the phenomenon had occurred in Lourdes, France. In 1858, a thirteen-year-old girl named Bernadette Soubirous entered what is commonly described as a grotto in the nearby Massabielle rocks just outside of Lourdes. Bernadette at first felt that she saw "a white light" shining from a grotto, but upon closer inspection she said that she found the light to be presented to her in the form of the Virgin. Thereafter the appearances were to become known as the Miracle of Lourdes, the Apparition, and to be immortalized in the classic movie *Song of Bernadette.* The visions at Lourdes carried substantial political overtones. A good analysis of the political aspects of the apparitions has been presented by Harris (1999). Harris suggests that the true subtext of Lourdes is "a story about France, about the struggles of Catholics in the aftermath of revolutionary turmoil, the capacity of the Second Empire to adjust to, and even profit from, religious movements, and the inability of the Third Republic to suppress them." As at Medjugorje, the appearances of the Virgin were frequently accompanied by claims of miraculous healings (Boissarie 1933; West 1957).

As I mentioned, similar appearances of the Virgin took place in Fatima, Portugal, in 1917. Portugal was on the verge of totalitarianism after the revolution there in 1910. One result of the revolution had been the decree of a sharp separation of church and state. While the intelligentsia and political center ridiculed and suppressed religion, strong, but threatened, religious faith persisted in the peasants of the rural countryside. It is within this context that over a six-month period a series of apparitions by the Blessed Virgin occurred to three small children from the rural village of Fatima. The visions had begun in May of 1917, and throughout the early years of World War I the children were later to claim that they been repeatedly visited by a male "Angel of Peace." Matters were brought to a head in the fall of 1914 when Pope Benedict XV pleaded with the leaders of Europe to stop the bloodshed. The Pope went so far as to issue a policy statement that the invocation known as "Queen of Peace, pray for us" should be permanently included in the Church's litany of prayer to Mary. It was in the context of having frequently heard this invocation upon the occasions of their church attendance that the children of Fatima had their first encounter with a vision of Mary. Mary thereafter appeared to the children on the thirteenth day of each month for six months. However, these apparitions had political implications: the mayor of Fatima, just before the scheduled August apparition, had the children arrested and tossed into jail, where they were interrogated and threatened with execution. One result of this precipitous action was described by numerous of the local believers as various solar abnormalities that occurred as an apparent sign of divine displeasure (Pelletier 1983). Just as at Lourdes earlier, and other locations such as Medjugorje later, the sun was said to "dance" in the sky, and also to vary alarmingly in its hues.

At one level the Fatima appearances obviously reinforced the threatened faith of the rural believers, helped along in no small part by the actions of the mayor whose tactics reified the old Marxist dictum that "external threat creates internal cohesion." One of revelations of Mary at Fatima specifically denounced Russia and predicted worldwide disaster unless all people turned to the Catholic faith (Haffert 1950).

## The Events in Medjugorje

Turning our attention back to the more recent phenomenon of Medjugorje, the visions there also took place in a specific historical context. The occupation of the nation by Nazi Germany in 1941 established a Croatian (i.e., largely Roman Catholic) fascist state that was strongly resisted by several groups. Especially suffering at the hands of the fascist regime were their Serbian (primarily Eastern Orthodox) neighbors. This oppression was in retaliation for 400 years of Turkish rule during which the Roman Catholics felt they had suffered a heavy hand upon them. In any event, hundreds had died in pogroms of the period.

Eventually the dissident group headed by Marshal Tito took full control after the German expulsion of 1945 and established a communist government. Even though Tito broke with Stalin and the Cominform in 1948 to develop his own brand of communism, Yugoslavia remained a communist regime, and religion was suppressed as a result. Religion, for example, had been entirely banned from the school classroom. In June of 1981 Ivanka Ivankovic, a fifteen-year-old schoolgirl, was the first to experience an apparition of the Virgin Mary. (I note that Ivanka's mother had just died and Ivanka was to immediately refer to the Virgin as "Our Mother.") The apparition of the Virgin immediately gave Ivanka various messages of hope and peace to convey to the villagers (as she would almost daily do thereafter; why the Virgin chose not to speak directly with the villagers is unclear). The other two schoolgirls who were with her on the occasion of the first appearance later said that they too had seen the Virgin. Within days, hundreds of

*Raymond A. Eve is professor of sociology at the University of Texas at Arlington.*

visitors began to arrive in the village to hear the messages and hopeful of seeing the apparition themselves.

The miracles in Medjugorje, while pleasing to the local Catholic peasants, set off dire concern among the party functionaries in the urban centers. Far from viewing the claimed appearances as fortuitous, the party leaders clearly feared that the apparitions might provide the focal point for a revitalization movement among the Catholics of the nation. The term *revitalization movement* is commonplace in modern anthropology. It refers to the largely spontaneous uprising of members of a formerly dominant (but then subordinated) group who attempt through militant action to recapture their former dominance, including the cultural and religious symbolism they favor. However, the uprising takes a singularly peculiar form. A revitalization movement typically begins in a manner that appears to be no more than a rebirth of interest in spiritual life among the oppressed. However, the apparently merely religious phenomenon in some cases provides an organizational structure for the discontented to quickly mobilize a political movement.

One example is the slave revolts in the Caribbean under colonialism. They initially appeared as an apparently apolitical revival of interest among the slaves in native African religions but were often followed by bloody slave uprisings. (So too, in some ways, can one conceptualize creationism within the U.S. as a revitalization movement—albeit a less bloody one. Creationism was the belief system of the dominant class a century ago in America. Little wonder that rural, older Protestants resent the politics and values of modern cosmopolitanism and multiculturalism. It is possible to see the creationism movement as less about the age of the Earth than as a revitalization movement intended to restore a formerly dominant worldview and lifestyle to its previous position of cultural and political dominance.)

In any event, the Communist government of the former Yugoslavia greatly feared that the alleged appearances of the Virgin Mary might be a thinly disguised device by which a Catholic Nationalist revitalization movement might attempt to reassert its claim to the nation.

On the eighth day of the children's visions, the police attempted to break up the crowd and take the visionary children in custody. A Franciscan priest, upon seeing this, took the children to sanctuary in his local church. The priest later said that a divine voice had told him to protect the children. Some more cynical observers suggested it was the first step in the appropriation of the miracle by the organized Church. Apparently the Virgin was prepared to accommodate the new indoor arrangements, and thereafter began to appear to the children daily inside the church. Apparently, also, the Virgin was becoming increasingly interested in politics. The children were receiving ten messages each per day now, and many of these consisted of statements such as, "The Russians will become Christians" and "The West has lost its faith."

Now the miracles came fast and frequent. Accounts of miraculous healings began to occur with frequency (for examples, see Nickell 1998). A cross on a nearby hill was said to sometimes turn into "a pillar of light," and as at Fatima, the sun was said to "dance" in the sky—although only some of those present on these occasions saw the transmutation of the cross or the dancing of the sun.

Vicka Ivankovic, who claims she has been meeting with the Virgin Mary every day for the past 21 years, and her groom Mario Mijatovic (L), are cheered by the crowds after their wedding in the Bosnian village of Medjugorje 26 January, 2002. AFP Photo Tom Dubravec.

Things also began to take a somewhat ugly turn within the religious community. There had been for a hundred years a competitive relationship between the lay clergy and the Franciscan priests of the area. The lay clergy, also called diocesan priests, report directly to their bishop. They are trained in seminaries that are not associated with a particular order. Priests in the orders, e.g., Jesuits, Franciscans, Dominicans, Maryknoll, and so on, are always subject to the authority of the local bishop, but their main allegiance is to their order and its mission.

The lay clergy had for some time accused the Franciscan Brotherhood of being arrogant and manipulative. Now the lay clergymen began to accuse the Franciscans of having knowingly appropriated the appearances of the Virgin to legitimate their order at the expense of the influence of the lay clergy.

## Conclusion

As I noted at the outset paranormal beliefs often can be generated by small group dynamics. Markovsky and Thye (2000), for example, have recently documented this dynamic in some convincing laboratory studies. However, it is clear that it is also possible for many paranormal beliefs to find their most primary initiation within the most macro-level of socio-cultural forces. I acknowledge that the children's initial encounters with the Virgin may well have been caused by personal factors. For example, Ivanka, who was the first to perceive a visitation, had just lost her natural mother. The perception of apparitional experiences spread rapidly among her intimate peer group. Markovsky and Thye's work may well help us to understand this spread of belief. The region's tension and anxiety likely exacerbated this contagion process and the need to believe among the youthful protagonists. The seeds of hatred and ethnic-religious tensions must have been easy to feel. The breakup of the former Yugoslavia was imminent, and with that breakup Medjugorje would soon find itself located in Bosnia, with all that implies. Such tensions that would lead to the horrors of the 1990s in Bosnia must have been easy for children

to intuit but not to understand. Little wonder that a nurturing maternal figure offering a message of peace and love would be of substantial comfort to the young people of the village. Ivanka herself said on film in the 1980s, "We have so much anxiety within ourselves—Our Lady has given us peace, especially the young people." She goes on to say that the appearances and pilgrimages (which brought great prosperity to the formerly poverty-stricken village) have "... given a sense of pride to a people whose lives have been mostly struggle."

On another level it is quite likely that the initial experiences of the young visionaries are partly due to the personal situation of the young teens. In all the European cases of appearances of the Virgin cited here, those who are the central initial witnesses are children or young teenagers; recall that in many historical witch trials the original witnesses were of the same young age. Some observers have suggested that in the case of the witch trials the experience of being so important a witness must have been very satisfying to young members of society who ordinarily lack any real power or influence over the lives of the adults around them.

*The Song Of Bernadette* tells the story of a nineteenth century French peasant girl, Bernadette Soubirous. While gathering firewood she sees a vision of the Virgin Mary in a grotto and through her unshakable faith and determination, and with help of a spring with healing powers, convinces the church and the rest of France of her vision and thus establishes Lourdes as a religious shrine.

Very quickly the personal experiences of the young people were appropriated by adults and authorities for their own purposes and their own needs. Clearly many Croatians felt it good to promote the legitimacy of the miracles in Medjugorje for purposes intended to put the Serbs and Muslims of the region at a disadvantage, as well as offering a potential rallying point for opposition to a secular central government. There is in one sense a most tragic irony in our observations. Most witnesses felt, and even now continue to feel, that the Virgin's appearances heralded an improved chance for peace and human kindness in the world. However, from another perspective it is possible to see claims associated with the appearances as symbolic weapons of mass destruction. In other words, the appearances may also have had the effect of both consciously and subconsciously heightening tensions in the region, tensions that would eventually lead to deaths of thousands. If this is indeed even in part what actually happened in the region we can only wonder at the terrible irony and grieve at the terrible results.

On a final note, a major implication of our case study here of a small town in the Balkans is that in some ways the political and ethnic tensions seen there in the 1980s may have moved beyond the Balkans. The phenomena of Medjugorje was fed to a large degree by tensions between Christians and Muslims. It is all too obvious that since September 11, 2001, we might now expect a rash of other pseudoscience beliefs that can be used as symbolic weapons—weapons of belief that have their roots partially or entirely in tensions that arise out of the conflict between the world's two most enthusiastically proselytizing religions. It's not just jetliners and anthrax powder that are capable of wreaking havoc; we have seen here that paranormal beliefs can sometimes carry a serious payload of their own.

## Note

I'd like to mention a personal experience of my own arising out of the study of Medjugorje. I was asked by a large newspaper a few years ago for my opinion of why millions were traveling to Medjugorje. I spent nearly an hour on the phone with the reporter explaining the political and historical contexts that undoubtedly played a huge role in the popularity and meaningfulness assigned by various groups and individuals to the apparitions. When the article appeared in print there was *not a single word* about the ethnic-nationalistic implications of the appearances, nor was their any mention of how the event symbolized internecine struggles within the Catholic hierarchy itself. When I phoned the reporter and asked why all this had been omitted, I was told because it was too abstract and therefore would have gotten in the way of a good "story." The lessons to be learned in how the press covers paranormal claims are obvious.

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# Hypothesis Testing and the Nature of Skeptical Investigations

*Testing hypotheses is the fundamental activity of scientists and skeptics. Now, a debate within the scientific community may be about to radically change the way we think about and conduct tests in the sciences.*

MASSIMO PIGLIUCCI

*"The test of statistical significance in research may be taken as an instance of a kind of essential mindlessness in the conduct of research." (Bakan 1966)*

*"Statistical significance is quite different from scientific significance." (Cox 1977)*

In 1987 a study by Schmidt, Jahn, and Radin proved that it is possible for the human mind to act on matter at a distance. More specifically, the researchers concluded that their data were consistent with the idea that a person could deviate—by acting at a distance—a significant number of particles arriving at a "quantum gate" and that the probability of this happening by chance was about p=0.0003. Before anybody rushes to his or her word

processors and starts typing letters of outrage to the SKEPTICAL INQUIRER, let me qualify the above statement. What I should have said is that we should accept the above-mentioned conclusion *if* we apply to that data set the standard statistical methods of hypothesis testing that scientists and skeptics learn from Statistics 101. Instead, if we conduct a much more sensible statistical analysis (known as the Bayesian approach, for the curious) we would conclude that the hypothesis that the results were due to chance was many more times (53,263,000 times to be exact) more probable than the hypothesis that they really had witnessed an example of psychokinesis.

**There is a slow revolution afoot in science that might ultimately radically alter the way scientists and skeptics think about the world and conduct their all-important business of testing claims of the normal and paranormal.**

This is important because there is a slow revolution afoot in science (it has been going on for several decades) that might ultimately radically alter the way scientists and skeptics think about the world and conduct their all-important business of testing claims of the normal and paranormal. In order to understand this change let us start with a brief summary of Statistics 101 and its relevance to skeptical research.

## Null Hypotheses and P-Values

According to the standard method of statistical inference, an investigator will formulate a research question in terms of a "null" (or default) hypothesis and an alternative outcome. For example: in an experiment on telepathy, one wishes to test if in fact the subject has the ability to read another person's mind. The null hypothesis is that he doesn't, the alternative hypothesis is that he does. The investigator then sets up an experiment in which, say, twenty-five cards with five different symbols are presented to a person who acts as "transmitter" of telepathic information. The "receiver" has to guess which symbol comes up every time. Since we know that there is a certain probability (namely, one out of five) to guess the right card by chance (i.e., without any telepathic ability), the expectation for the null hypothesis is that, on average (i.e., over many trials), the allegedly telepathic subject will score only one-fifth of the times. Any *significant* deviation from that value (in the excess direction) will lead to the rejection of the null hypothesis and to the acceptance of its alternative (i.e., the subject really is telepathic).

One of the key words just mentioned is that the deviation has to be significant, but according to what criterion? Standard statistical theory tells us that *if* the distribution of the scores follows a particular distribution (say, a bell curve), then one can calculate a simple statistic (known as a *p-value*) that tells us what is the probability that a score like the one observed *or more extreme* (i.e., more favorable to the telepathy hypothesis) would be observed in an infinite run of the experiment. If that probability is lower than a preset threshold (usually 0.05, i.e., 5%), then we conclude that the hypothesis of a chance result has to be rejected and its complement (telepathy) accepted.

## The Problem with Null Hypotheses

There are two fundamental problems with the above scenario, one concerning the idea of a null hypothesis, the other regarding the calculation of p-values. Let's start with the first one. In reality, we are not interested in rejecting the null hypothesis at all. Statistically, the null is interpreted as the situation in which the outcome of the experiment is exactly the one expected when chance only is acting (in our case, exactly one-fifth positives). But scientifically, we are interested in what one could think of as an "extended" null hypothesis (figure 1). We wish to know if the actual outcome is far enough from the one predicted by chance to convince us that something is really going on.

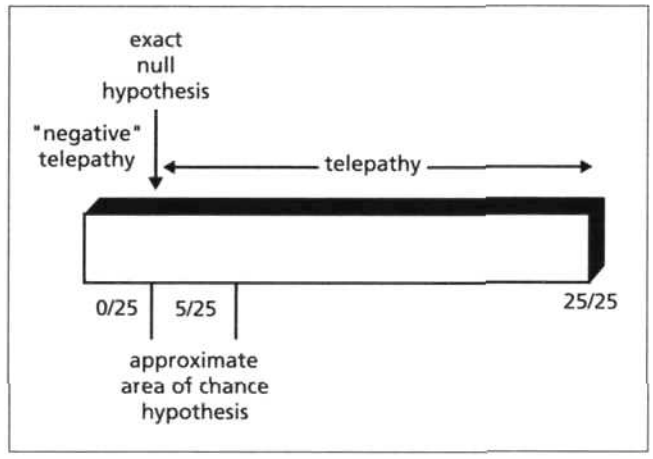


Figure 1. The structure of hypothesis testing in an hypothetical experiment on telepathy carried out with twenty-five cards and five symbols. What one is really interested in is not the rejection of the exact null hypothesis (which is what standard statistical tests do), but in seeing if the outcome of the experiment is far enough from that point to seriously raise the possibility of a systematic effect (perhaps due to real telepathy).

This is an important difference because in any real experiment there will always be some small but systematic deviation from the exact null. Some factor that the experimenter has not taken into account (other than chance) will likely cause small deviations from the expected result, especially if for some reason it is not possible to conduct a completely randomized and double-blind experiment. For example, cards may not have been shuffled well enough, or—if the input is generated by a computer—the random numbers used to produce the cards to present to the subject may not actually have been truly random, and so on. What we really want to know, in other words, is if the actual result is far enough from the range of outcomes

*Massimo Pigliucci is associate professor of ecology and evolutionary biology at the University of Tennessee and author of* Denying Evolution: Creationism, Scientism, and the Nature of Science. *His essays can be found at www.rationallyspeaking.org.*

expected by chance to raise the possibility of a telepathic phenomenon.

Furthermore, it should be clear that the two hypotheses we are considering (the null and the alternative) are actually not the only two interesting scientific possibilities. While it is true that either the outcome of the experiment is close to one-fifth or it isn't (factual result), the possible interpretations (scientific result) of either outcome may be varied. Consider some of the alternatives: there could be telepathy, but the effect is too weak to detect with the small number of runs typically carried out in these experiments (i.e., failing to reject the null hypothesis is not the same thing as accepting it!); or, a large result on the right side of figure 1 could be explained by the fact that—despite the experimenters' precautions—the subject cheated (so rejection of the null hypothesis does not automatically entail the acceptance of its complement). And so on. One could conceive of a series of different hypotheses competing for the most sensible explanation of the data at hand.

### The Problem with P-Values

The second problem with the standard statistical approach to scientific inference is the meaning of p-values. As I said earlier, they are an indication of the probability (given certain assumptions) of obtaining the same result or a more extreme one in an infinite repetition of runs. But surely this is not what we want to know. We wish to know if the observed outcome of *one particular experiment* is far enough from the null zone to raise the possibility of telepathy. This is not the same as asking what is the probability of getting a result equal to the null expectation or more extreme.

Moreover, what does it mean to say that the p-value gives us a probability valid over an infinite (or sufficiently long) series of runs? This raises serious philosophical as well as practical problems: we cannot repeat an experiment but a small number of times (sometimes only once), let alone pretend to know what would happen with an infinite series.

Finally, as I said earlier, if there is any systematic effect that we did not explicitly consider, no matter how small, this will result in a deviation from the strict null hypothesis. In that case, p-values will become smaller and smaller as a function of the sample size (the number of observations), so that for a large enough sample, anything will become statistically significant. This is exactly what happened with the psychokinesis experiment mentioned at the beginning: with 104,900,000 observations (one per particle), any slight asymmetry in the experimental conditions (for example in the building of the apparatus to count the particles) will yield false positives.

### What to Do?: The Theory

Given all these problems, what is an honest skeptic (or scientist) to do? What many statisticians and scientists have suggested for decades: Throw away the conceptual framework of standard statistics and use one of several alternative ways of thinking.

The first thing to realize is that philosophically speaking we are simply not interested in what standard statistics tells us: we do not want to know the probability of the observed data given a particular hypothesis (the null). What we wish to know are the likelihoods of different hypotheses given the observed data, that is, the exact opposite of the normal approach.

In order to get what we really want, then, we need to start by explicitly considering several (not just one or two) hypotheses and find ways to assess their relative "fitness" when compared to the data. In the case of the psychokinesis experiment, possibilities include: there really was a mind-over-matter phenomenon; the results were due to chance; there was cheating on the part of the subject; there was a small but systematic defect in the experimental apparatus that generated the particle stream; there was an error in the method of counting particles; or none of the above (the latter is a catch-all category that is always necessary in science—sometimes an experiment is simply inconclusive).

Our task then is to find ways to quantify the likelihood of these different hypotheses and decide which one(s) appear more probable given the available information. If more than one (or none) seem to win the game after this round, we obviously need to generate more data that can discriminate among the remaining competitors (or go back to the drawing board and propose new alternatives). And so on. The game of science continues.

### What to Do?: The Practice

In practice, comparing the fitness of different hypotheses is

## Why Intelligent Design Is Not Science

Another consequence of the view of hypothesis testing presented in this article is that the so-called "Intelligent Design" (ID) theory is not science, but rather an argument from ignorance. William Dembski, one of the leading proponents of ID, has claimed that what he calls the "design inference" can be made after one successively eliminates simpler hypotheses. His "explanatory filter" starts out by considering the hypothesis that, say, a complex biological structure is the result of a simple physical law (such as the law of planetary motion). If not, it asks if it could have been assembled by chance (which can yield more complicated patterns than regular laws). If the answer is again no, Dembski concludes that one is justified in inferring the action of a designer (of unknown origin and characteristics, of course).

Besides the fact that the explanatory filter does not consider several other possibilities (e.g., chaotic phenomena, emergent properties due to nonlinear interactions, etc.), it should be clear that the filter itself suffers from the same problem of the standard approach in statistics: it simply does not reflect the way science works. The design hypothesis is assumed to win by elimination, just like the opposition between null and alternative hypotheses. But we have seen that in reality scientists consider several alternative hypotheses *simultaneously* (not in sequence) and weigh their positive merits against each other. Nobody has the luxury of winning by default.

What, then, if anything, does ID represent? It is equivalent to our "catch-all" category of "none of the above." That is, ID is an unnecessarily fancy way of saying "I don't know."

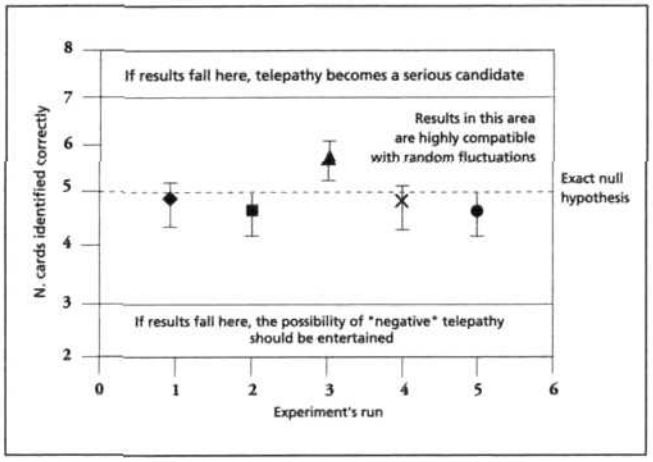


Figure 2. Hypothetical results (obtained by computer simulation) of five runs of an experiment on telepathy showing how a graphical analysis of means and standard errors (vertical bars) allows the experimenter to reach conclusions about alternative hypotheses. Notice that one of the five runs (n. 3) yielded results that are significantly different from the exact null according to the standard statistical framework. Yet there is no telepathy going on between my computer and me, you can be assured of that.

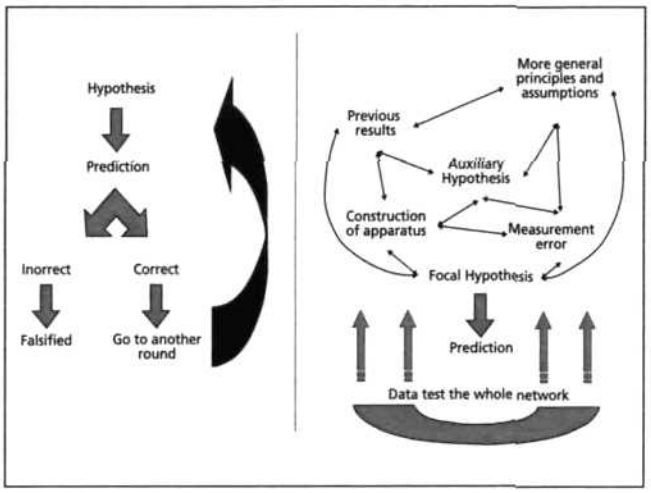


Figure 3. Two models of hypothesis testing: on the left, Popper's "naïve" falsificationism, where an hypothesis makes falsifiable predictions that are directly tested by data; on the right, a complex web of knowledge in which assumptions, hypotheses, and reliability of measurements are simultaneously tested during an ongoing process of research.

## On Falsifiability

Skeptics are often fond of invoking the concept of falsifiability, introduced by philosopher Karl Popper, to get rid of pseudoscientific beliefs. The idea is that if a theory or claim cannot possibly be refuted by any empirical evidence, it does not advance our knowledge of the world (though that doesn't necessarily mean that it is false). For example, claiming that an alleged paranormal phenomenon does not occur under controlled conditions because the very presence of a skeptic neutralizes it via some sort of negative vibration makes the claim itself unfalsifiable: no piece of empirical evidence could possibly show it false (figure 3, right).

While it is true that an unfalsifiable statement is of little use, one needs to be careful in light of our discussion of hypothesis testing in science. As I mention in this article, scientists do not reject a hypothesis just because it has failed one (or even a few) tests. The reason for this is that there may be alternative explanations for the failure, such as a faulty apparatus, or the simultaneous action of other factors not explicitly considered in the experimental design.

We can therefore think of science as testing not just a specific hypothesis at a time, but also the entire web of assumptions, corollaries, and additional hypotheses that are connected to the one that is the focus of our investigation (figure 3, right). Only if the test fails and we can reasonably exclude that other factors were at play, can we then say that the hypothesis has not withstood the test of the data. However, since there is an infinity of factors that could possibly be involved in any particular investigation, our conclusions (positive or negative) will only be probabilistic. Strictly speaking, we can never reject a hypothesis (*pace* Popper), only determine that its likelihood of being true has become vanishingly small.

actually not that difficult, although I cannot get into the technical details here (but see some of the references at the end if you wish to try). Mostly, there are two things to do: visualize the data in informative ways, and calculate simple statistics (called likelihood ratios) that quantify the probability of a given hypothesis to be a better match for the data than another one(s). (A more complex approach is to use a full-fledged Bayesian framework, but that is beyond the scope of this article; again, see references.)

An example of visualization of data is shown in figure 2. These are hypothetical data from a telepathic experiment with our familiar set of twenty-five cards with five symbols (the data were obtained by computer simulation). It is clear from the plot of means and their standard errors that the most likely of three hypotheses being considered is in fact that the results are due to random fluctuations (indeed they were, since that's how I generated them in the computer!). Had we seen one or more of the runs with a mean in the "possible telepathy" zone (and a standard error that clearly put that mean away from the boundary with the chance events), we would *not* necessarily have concluded in favor of telepathy: there are still a series of alternative hypotheses (such as cheating, or a defect in the measurement apparatus or—in the case of my simulation—that the computer did not truly generate random numbers with a mean of five) that would need to be considered before conferring a high likelihood to the telepathy hypothesis.

A common way to quantify likelihoods of different hypotheses given the data is to calculate what is appropriately called a series of likelihood ratios comparing all pairs of hypotheses. A likelihood ratio is simple to obtain (you only need a pocket calculator) once one has carried out standard statistical analyses such as t-tests, analyses of variance, or regression analyses. For the really curious (and somewhat

*Hypothesis Testing and the Nature of Skeptical Investigations*

*Continued on page 48*

# A Presentation Without Arguments: Dembski Disappoints

*William Dembski is a prominent advocate for Intelligent Design (ID). In his presentation to the Fourth World Skeptics Conference in Burbank, California, he avoided discussing the substance of the controversy, thus laying bare the futility of ID wherein specious rationalization substitutes for evidence.*

MARK PERAKH

One prominent feature of the Fourth World Skeptics Conference in Burbank, California, in June was the invited appearance of two prominent proponents of Intelligent Design (ID), William Dembski and Paul Nelson, to give talks and to defend their views in an open dispute with two opponents of the anti-evolution movement, Wesley Elsberry and Kenneth Miller.

This not-quite-common feature was despite the fact that the conference, organized by the Committee for the Scientific Investigation of Claims of the Paranormal (CSICOP), was designed as a meeting of skeptics, whose participants are squarely on the side of genuine science and

are opponents of all disguised incarnations of creationism.

I cannot remember a single conference of creationists wherein the opponents of creationism were invited to give talks in open discussion.

The SKEPTICAL INQUIRER reported on this session in its subsequent Conference Report (September/October 2002, pp. 8–12), but here I comment more fully on and critique the presentation by Dembski.

**The text of Dembski's presentation is notable by the almost complete absence of arguments relevant to the gist of the dispute between ID advocates, like himself, and the opponents of that theory.**

William Dembski

The proponents of creationism sometimes accuse their detractors of being doctrinaire adherents of antireligious bias whose motivation is not pursuing the truth but assaulting religious faith. Although this may be not the most important point, still it seems worth mentioning that both Elsberry and Miller have asserted that they are not atheists. Professor of biology Miller is a faithful Catholic, and Elsberry, while vigorously defending the theory of evolution, has also said that he is a "theistic evolutionist."

Hence, both Dembski and Nelson were given a chance to argue in favor of their position using arguments of substance, based on facts rather than on ideology, in a dispute with opponents who had no reason to assault Dembski's and Nelson's religious beliefs. In this brief article I will discuss only the presentation by Dembski.

## Complexity

The text of Dembski's presentation (Dembski 2002a) is available on the Internet. This text is notable by the almost complete absence of arguments relevant to the gist of the dispute between ID advocates, like himself, and the opponents of that theory. Indeed, the only instance of Dembski's touching on the substance of the dispute seems to be a paragraph where Dembski mentions his term *specified complexity* and unequivocally defines it as a synonym for "specified improbability." Of course, there is nothing new in that statement. Dembski has expressed his interpretation of complexity as "disguised improbability" in various forms in many of his articles and books (Dembski 1998 and 2002b). This interpretation has been criticized more than once as contrary to logic and to the accepted mathematical notion of complexity (Wein 2002, Perakh 2001 and 2002, and many others). Continuing in the same vein, Dembski repeats his often-stated thesis that what he calls "specified complexity" is a necessary indicator of design. The fallacy of that statement has been demonstrated more than once (for example, Edis 2001, Wilkins and Elsberry 2001, Perakh 2001 and 2002, Wein 2001 and 2002, Fitelson et al. 1999, Pennock 2000, Elsberry 2002, and others). Indeed, consider an example discussed several times before (Perakh 2001): Imagine a pile of pebbles found on a river shore. Usually each of them has an irregular shape, its color varying over its surface, and often its density also varying over its volume. There are no two pebbles which are identical in shape, color, and density distribution. I guess even Dembski would not argue that the irregular shape, color, and density distribution of a particular pebble resulted from intelligent design, regardless of how complex these shapes and distributions may happen to be. Each pebble formed by chance. Now, what if among the pebbles we find one that has a perfectly spherical shape, with an ideally uniform distribution of color and density? Not too many people would deny that this piece in all likelihood is a product of design. However, it is much simpler than any other pebble, if, of course, complexity is defined in a logically consistent manner rather than in Dembski's idiosyncratic way. A logically consistent definition of complexity is given, for example, in the algorithmic theory of randomness-probability-complexity (and is often referred to as Kolmogorov complexity). The Kolmogorov complexity of a perfectly spherical piece of stone is much lower than it is for any other pebble having irregular shape and non-uniform distribution of density and color. Indeed, to describe the perfectly

*Mark Perakh is professor of physics, emeritus at California State University Fullerton. He has authored nearly 300 papers in various fields of physics and electrochemistry, as well as several books; he holds a number of patents and is a recipient of several prizes and awards for his research, including one from the Royal Society of London for the discovery and study of the photodeposition of semiconductors. His latest book, devoted to the dispute between the genuine science and fallacious theories like Intelligent Design, Irreducible Complexity, and the like, has been accepted for publication by Prometheus Books.*

spherical piece one needs a very simple program (or algorithm), actually limited to just one number for the sphere's diameter, one number for density, and a brief indication of color. For a piece of irregular shape, the program necessarily must be much longer, as it requires many numbers to reproduce the complex shape and the distributions of density and of color. This is a very simple example of the fallacy of Dembski's thesis according to which design is indicated by "specified complexity." Actually, in this example (as well as in an endless number of other situations) it is *simplicity* which seems to point to design while complexity seems to indicate chance as the antecedent cause of the item's characteristics.

### *Ad Populum* Arguments

That is about all Dembski chose to discuss in his presentation with regard to the substance of the dispute. Instead, Dembski dabbles in prophecy. His argument in favor of ID mainly boils down to references to polls which show that the majority of Americans believe in some form of creationism. This may be true. However, Dembski himself gives an example of astrology, which is probably even more popular in America than is ID, but this by no means makes astrology plausible. Dembski is not arguing in his presentation that ID will win the minds because it is true. It will win, predicts Dembski, because the American public is predisposed to believe in ID. The same may be true, though, for astrology and other fads and fallacies he himself listed as being widespread despite their contradicting scientific data.

One more argument by Dembski is that young people are inclined to take the side of innovators, and, since ID-ists are the new guys in town, the sympathy of the younger generation will be with them, thus ensuring their victory. Once again, this may be true but it has nothing to do with the merits of ID "theory." If scientific theories were accepted or rejected by a popular vote, or just by the vote of young people, quantum mechanics, the general theory of relativity, and a whole bunch of other great achievements of the human mind would never have had a chance to take their legitimate place in the progress of humankind.

Later Dembski argues that his ID theory is "not a crank theory (at least not one that is obviously so)." The sole argument Dembski offers in favor of that statement is that Paul Davies "thinks that it's onto something important," thus disagreeing with those who, like Wesley Elsberry, "think it merely codifies the argument from ignorance." This seems to be a rather weak argument, even by Dembski's standards. The reference to Davies can be interpreted in various ways and is far from endorsing ID as a real scientific theory. Moreover, so what if Davies or any other writer has indeed said something that can somehow be interpreted charitably regarding Dembski's ideas? A position whose strength can be sustained only by such ambiguous references is weak indeed and can be suspected of being crank science with a high degree of likelihood. If all Dembski can say in support of his views is that somebody thinks it has "something to it," it raises a suspicion that he has no factual evidence favoring his suppositions. To show that certain ideas or theories indeed belong in real science rather than crank science, one has to subject those ideas to merciless tests, wherein evidence supporting these ideas can be reproduced and independently verified. Dembski and his colleagues in the ID "movement" not only did not ever produce such evidence that could be independently verified, but in fact offered no evidence at all despite having substantial financial support and a significant fighting force at their Discovery Institute of Seattle. Instead of supporting his theory by factual evidence and arguments of substance, all Dembski was able to do was to resort to a dubious reference that proves nothing and is largely irrelevant. That is the tenor of Dembski's entire presentation.

In a similar manner, Dembski plays with other quotations allegedly supporting his thesis, like a quotation from Mencken juxtaposed with a quotation from Gould, which, Dembski implies, contradict each other. The two quotations may or may not contradict each other (and actually they were relating to different situations and therefore their juxtaposition was meaningless). It is, however, always possible to mine a host of quotations on every subject and pretend that they prove something even if they are not relevant to each other in any way. Such play with mutually irrelevant quotations confirms the suspicion that Dembski has no real arguments that would be necessary in a talk to an audience not consisting of such ID adherents who would happily swallow anything seemingly confirming their already held preconceptions.

One of the main points stressed by Dembski in his presentation is the assertion that Intelligent Design, unlike such fringe pseudoscience as astrology and the like, has by now become firmly "mainstream." In this, Dembski depicts the desired as if it is real. So far, the overwhelming majority of mainstream scientists ignore ID, as can be seen by searching through the scientific literature. Practically no scientific magazine has published articles by scientists wherein a discussion of ID and related matters could be found. No references to ID can be found in the mainstream peer-reviewed scientific publications. The ID advocates either publish their productions as popular or semi-popular books and collections by nonscientific publishers or in their own periodicals mostly connected to their Discovery Institute. The only exception seems to be Dembski's monograph (Dembski 1998) published by the Cambridge University Press. Even this book, reportedly, was Dembski's doctoral dissertation in *philosophy* rather than in science. Regardless of how many times Dembski will repeat his mantra about "mainstreaming" ID, the scientific community has not and will not accept the claims by ID-ists unless and until he and his colleagues present real data supporting their contentions. So far no such data have been presented.

The overall level of Dembski's acerbic assault on skeptics can be exemplified by his comment that the letters COP in the acronym CSICOP are "not accidental." Is this so? The absence of real arguments may be sometimes replaced with attempts at being witty by using irrelevant puns. Dembski wants readers to believe that the organization of skeptics is like police trying to muzzle its opponents. Somehow he does not notice the

absurdity of such an accusation given the fact that he and Nelson are freely presenting their views at the meeting organized by the same CSICOP which allegedly is out to prevent the IDists from presenting their views.

**If Dembski or any of his colleagues showed any reasonable evidence supporting their views, then, beyond doubt, scientists would be much more receptive to their theory.**

Let me list some of the items that were discussed by Dembski's critics (a partial list of critical reviews of Dembski's literary production is given in my references section; this list does not include many more critical discussions of Dembski's work). To some of his critics Dembski never replied in any form. To some others he responded, for example in his latest book (Dembski 2002), with superficial and largely irrelevant arguments (as discussed by Wein 2002 and Perakh 2002), but he never really replied to the substance of a number of points listed below, which constitute essential elements of his theory.

- Dembski asserted (Dembski 1998 and 2002) that complexity is tantamount to low probability. This assertion was rebuffed by more than one of the listed critics. Dembski never replied to that critique.
- Dembski asserted that his "explanatory filter" (Dembski 1998) never produces "false positives." This assertion was rebuffed by several of the listed (as well as by some not listed) critics. Dembski never replied to them. (It can be argued, though, that in his latest book Dembski [2002] by implication conceded that false positives can be produced by his "explanatory filter" after all; he still did not admit this explicitly.)
- Dembski announced a supposedly new important law—the so-called Law of Conservation of Information (Dembski 1998 and 2002). More than one critic argued that the law in question does not exist. Dembski never replied to those critics.
- Dembski widely used a concept of what he called "specified complexity" (Dembski 1998 and 2002). More than one critic argued that the concept in question is meaningless in the sense it has been used by Dembski. The latter never replied to this critique. The same can be said about Dembski's concept of CSI—"Complex Specified Information" (Dembski 1998 and 2002).
- Dembski insists that design can be reliably inferred if low probability of an event is combined with its specification. More than one of the listed critics has argued that the specification as defined by Dembski has no reasonable interpretation. Dembski never responded to those critiques.

There are other claims by Dembski that have been subjected to critique to which Dembski has never responded while he continues to promote the same criticized concepts and assertions.

In his presentation, Dembski condescendingly suggested a program of action for skeptics if they wish to defend their position against ID. In his uncompromising self-confidence Dembski seems not to realize that if he suggests a new, allegedly revolutionary theory, the burden of proof is on him and on his colleagues in the ID camp. It is ID-ists who need to provide evidence, any evidence, in support of their position. It is precisely the absence of evidence for the ID theory that makes skeptics (read: mainstream scientists) reject ID. If Dembski or any of his colleagues showed any reasonable evidence supporting their views, then, beyond doubt, scientists would be much more receptive to their theory. So far this has not happened. Therefore, rather than suggesting what skeptics should do to defend their views from the assault by ID, Dembski should better think of how to search for any believable proof of his own so far arbitrary and dubious assertions.

By inviting Dembski and Nelson to give talks at the Fourth World Skeptics Conference, its organizers offered Dembski a chance to reply to his critics on the matters of substance and to defend his position in front of a diversified audience, mostly not very friendly to his views. By taking the floor at the conference in question, Dembski put himself in an unenviable position of denying a simple fact obvious to all—he was complaining about skeptics suppressing his views while speaking to the same skeptics who provided him the forum.

## Acknowledgements

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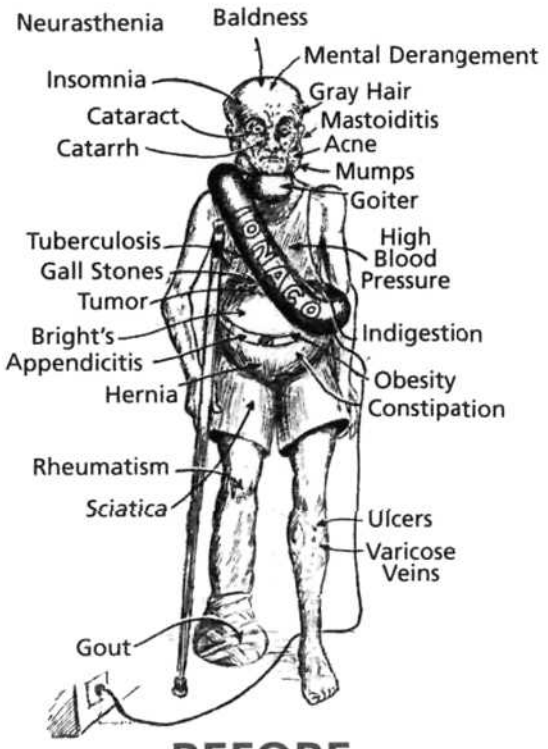
# Hugo Gernsback, Skeptical Crusader

*Throughout the 1920s and 1930s magazine publisher and "father of science fiction" Hugo Gernsback used his popular publications to fight a one-man war against pseudoscience. Virtually every issue of magazines such as* Science & Invention *contained debunking articles, tests on claims for psychic abilities and extraordinary medical devices, and offers of substantial cash awards to anyone who performs a successful demonstration.*

RON MILLER

When *Poptronics*, a magazine published by Gernsback Publications, recently published an article expounding the bizarre theory that the great pyramids of Egypt are in fact giant radios, Hugo Gernsback would surely have been at best astonished and at worst horrified. Long before Randi and CSICOP, the Luxembourg-born editor and founder of a seemingly endless line of popular magazines had waged a long—and for the most part solo—war against pseudoscience of all kinds, from astrology to medical quacks, spiritualism and every other sort of "humbuggery." He used the power of his immensely popular magazines to advance his crusade and was always willing to put up considerable amounts of cash to back his beliefs.




If we are to believe the testimonials, a person as indicated above could be cured. What Ionaco can't cure simply "ain't."

Advertisement for the Ionaco treatment

Gernsback was born in 1884, emigrating to the United States when he was twenty, bringing with him an abiding passion for anything dealing with electronics and radio. By 1906 he was marketing a home radio set and two years later founded *Modern Electrics*, the first of a long line of magazines to bear his name as editor or publisher. It was in this magazine that he serialized his science fiction novel, *Ralph 124C41+* (1911–1912), a dreadful story from a literary viewpoint—it is really little more than a catalog of the scientific and technological wonders Gernsback expected to find in the twenty-seventh century—famous for its accurate description of radar. *Modern Electrics* evolved into *Electrical Experimenter*, which featured the regular installments of "Baron Munchausen's Scientific Adventures," written anonymously by Gernsback. Convinced that science fiction was the ideal medium by which science education could be painlessly sugar-coated for his readers, Gernsback made certain that science fiction stories and serials were included in most issues of *Electrical Experimenter* and its successor, *Science & Invention*. Stories included continuations of the Munchausen series as well as reprints and original stories by authors such as Ray Cummings, Clement Fezandie, and Abraham Merritt. After seeing the enthusiastic response to a special "scientific fiction" number of *Science & Invention* (August 1923), Gernsback announced his plans for a new magazine devoted entirely to scientific stories, to be called *Scientifiction*. It was not until nearly three years later, however, that this project got off the ground and the first issue of *Amazing Stories* appeared. It was the first magazine to exclusively publish what was to be later known as science fiction. Although by today's standards most of the fiction published in the old *Amazing* is almost unbearably creaky, didactic, and, in far too many instances, almost illiterate, they were almost all written under Gernsback's ironclad dictum that science fiction's first duty was to be educational, with all other considerations secondary at best—if they were considered at all. The magazine was fabulously popular.

Part and parcel of Gernback's intense interest in getting the fundamentals of hard science across to his readers was his no less enthusiastic campaign against pseudoscience. He took on astrology, spiritualism, perpetual motion machines, and, especially, medical quackery. Page after page, even whole issues, of *Science & Invention* and its sister magazines were devoted to deflating pseudoscientific medical claims, such as the debunking of "Dr." Rogers's "neurophonometer." Rogers immediately retaliated by unsuccessfully suing *Radio News* for a million dollars. Gernsback also took on Dr. Abrams "of Electronic fame" [see "The King of Quacks: Albert Abrams, M.D." by J.D. Haines, SKEPTICAL INQUIRER, May/June 2002] and Dr. Farnam's "Radio Health Energizer."

Gernsback provided a feature article for the October 1928 issue in which he exposed "The Ionaco Swindle." Manufactured by Gaylord Wilshire's Iona Company, the Ionaco treatment, using an electromagnetic "belt" (which resembled, in Gernsback's words, "a horse collar more than anything else"), was supposed to magnetize the iron in the wearer's blood to the end that everything from acidosis to

vertigo was cured. Highly successful, the Iona company had offices in San Francisco, Los Angeles, Seattle, Portland, Denver, and Kansas City. It even published the *I-On-A-Co News*, a four-page newspaper.

The device itself was simple enough, consisting of a buckram rim about eighteen inches in diameter, wrapped with 3,411 feet of cotton-covered copper wire, all in turn covered with tape, felt, and an imitation leather sleeve. When plugged into a ordinary wall outlet, a small lamp held near the belt would glow by means of the current induced by the big electromagnet. "The gullible person," Gernsback said, "is supposed to think that this shows a mysterious action." Once the belt was plugged in it was placed around the waist of the patient, where the magnetic effect was supposed to cure just about anything. The Ionaco belt was not limited to human sufferers; it had its veterinary uses as well.

The literature that accompanied the Ionaco belt was not the least shy about the claims made for it, nor did it stint in its pseudoscientific explanations, "all of which sounds like rubbish to the man of science. Through the pamphlet occur a few statements by reputable scientists . . . these statements are well-known; but the point remains that pertinent passages are deliberately excerpted and presented to mislead the unwary. . . . Of all the highfalutin nonsense, peruse the following, copied verbatim from Wilshire's booklet, entitled 'The Short Road to Health':

> However, not only does Ionaco act indirectly as a catalyser through the iron but it also acts directly, for electro-magnetism is itself a catalyzer and induces metabolism. Nowhere may this be better seen than in the wonderful cures performed by sunlight, and light is but an electro-magnetic phenomenon.
>
> The magnetic flux from the Ionaco acts directly upon the electronic structure of the molecular iron in the system and seems to restore the proper catalytic action in pathologic conditions. The result is that normal oxidation takes place and this explains the marvellous therapeutic results from using the Ionaco.

Of course all the above is all nonsense, and has no foundation in fact at all."

Gernsback was perfectly aware why the Ionaco belt seemed to actually work in many cases, if the pages of enthusiastic testimonials were any indication. "What the gullibles never seem to get into their heads, is that 98 percent of the cures usually lie in 'faith,' and they would have been cured just as quickly by the 'waving hand' healing process, or by 'sugar-coated pills,' if their faith had been sufficient."

**"What the gullibles never seem to get into their heads, is that 98 percent of the cures usually lie in 'faith,' and they would have been cured just as quickly by the 'waving hand' healing process, or by 'sugar-coated pills,' if their faith had been sufficient."**

Miss Belle Fox demonstrating one way in which the Ionaco may be worn. The other method was to support it from one shoulder so that it ran diagonally across the body.

Not satisfied with stating his own opinions regarding the worthlessness of the Ionaco belt, Gernsback followed up his article by reprinting a report issued by the Seattle Better Business Bureau that soundly condemned the Ionaco device, as well as statements from numerous doctors and scientists. Gernsback discovered that many of the laudatory testimonials published by the Iona Company were not all that they seemed. In one example, he contacted a Dr. Arbuthnot, who had been quoted by Iona as saying that her "wry neck had been instantly relieved" by the machine. Arbuthnot replied to Gernsback that, to the contrary, she "might just as well have used the left hind foot of a rabbit." Other testimonial writers Gernsback contacted knew nothing of their "case" at all!

"Of course," Gernsback observed, "the Ionaco is not made to cure, but to sell." And it sold very well, too, in spite of its hefty price tag of $58.50 ($65 in time payments). It was a good deal for the Iona Company since the Seattle Better Business Bureau estimated that that the belt cost only $5.75 to manufacture and Gernsback was able to duplicate one for only $3.50.

## Hugo Versus Astrology

Gernsback was particularly skeptical about the claims of astrology. He devoted his monthly essay, "The Astrology Humbug," in the October 1926 issue of *Science & Invention* to the subject. "One would think," he begins, "that in an enlightened age, which we are pleased to call our present era, Astrological

*Ron Miller is an author/illustrator specializing in scientific subjects—astronomy and space sciences in particular. He is the author of* The History of Science Fiction *and* The Dream Machines, *and is the co-author of* The Art of Chesley Bonestell. *He is presently writing and illustrating a ten-book series about the solar system for young adults.*

nonsense should have disappeared from the face of the earth long ago. The reverse is actually the fact. . . ." Gernsback goes on to point out all of the flaws and discrepancies of astrology, criticisms on which "the astrologers remain silent."

In spite of astrology's obvious lack of efficacy or any scientific basis, "astrologers and near-astrologers" still manage to "prey upon credulous souls whose intelligence rating, as a rule, is not very high, or who, otherwise, are so superstitious that their reasoning is thereby deadened. . . . Do not deceive yourself," he urged his readers, "by joining that class of those simple mortals who tell you glibly that they had their horoscopes taken, 'just for the fun, of course,' all the while insisting they know it is a humbug. *Secretly* they think, 'there may be something to it after all."

Not willing to dismiss astrology as a harmless fad, Gernsback condemns it as being capable of doing great harm, not the least of which is defrauding the public of huge amounts of money, for astrologers were then demanding fees as high as $300 for a reading—a very significant sum in the mid-1920s.

Like the Amazing Randi, Gernsback was willing to put his money where his mouth was. In the case of astrology, he had a standing offer of $6,000 that would be awarded to "the astrologer or forecaster who will foretell three major events of such a nature that he will have no control over the outcome of the same. He must describe in advance each event in detail, giving the location and result or the casualties if the event is an accident. $1,000 will be paid to the astrologer or forecaster who will produce three accurate, detailed, and perfect horoscopes, free of contradictions, on the lives of three people whose initials will be given him when he requests the same and the birth dates and place of birth will also be supplied by this office." For months, the magazine's stand on astrology filled its letter columns with considerable criticism from believers and *Science & Invention*'s challenge was roundly criticized by astrological magazines, such as *Science and Astrology*. "One group of astrologers," Gernsback asks, "tells us that no one can possibly live up to the conditions of our contest. . . . We wonder why?" Nevertheless, over the fifteen months the challenge ran, thousands of astrologers and would-be astrologers from all over the world responded to the contest, attempting to successfully cast horoscopes for the three individuals selected by the magazine. No one appeared to have attempted to describe the major event asked for and none of the horoscopes agreed—they not only contradicted themselves, they were unanimously unsuccessful in describing the three people. Gernsback was fair: he not only published many of these horoscopes verbatim, he followed with the correct descriptions of the individuals so the readers could judge for themselves how accurate the astrologers had been.

"And so we close the $6,000 Astrology Contest," the magazine concluded, "with the hope that some this would-be science shall become scientific enough to give us accurate information. . . . The subject is interesting; it is even fascinating, but it holds no truth whatsoever."

G.C.B. Rowe demonstrating how the "Konzentrator" was worn. This simple device was claimed to stimulate thought and perform other wonders.

## Hugo Versus the Spooks

Gernsback was no less gentle with the spiritualism that was so popular in the 1920s and devoted numerous articles, some of them authored by the magician Dunninger (chairman of the magazine's "Psychical Investigation Committee"), to debunking it. Occasionally, Dunninger would devote a feature article to the exposé of an individual medium, such as Portland, Oregon's Miss Amelia Bosworth. A long-running series was written by Edward Merlin, "the reformed spiritualist," who for years had successfully performed séances. He was "positive that such a thing as a spiritual manifestation has never been produced and that all mediums that operate for pay are fraudulent." Merlin's articles—profusely illustrated with how-to photographs—were devoted to exposing the gimmicks and techniques used by mediums and spiritualists.

Similar to its challenge to astrologers and crank inventors, the magazine offered a reward of $1,000 for evidence of actual supernatural phenomena. $10,000 was added to this by Joseph F. Rinn and another $10,000 by Dunninger, making the total prize a staggering (certainly by 1927 standards) $21,000. To the best of my knowledge, this money remained as safe as any of the other prizes Gernsback offered.

## Hugo Versus the Pseudoscientists

The nature of *Science & Invention* attracted inventors of all kinds, from the sincere, and often talented, home mechanic and electrician to the crank whose inventions defied all known laws of physics, mathematics, and chemistry. "The editors," the magazine complained, "have received thousands of different designs of perpetual motion devices, and have received hundreds of circular letters soliciting finances for the building of perpetual motion machines." If they receive such a vast quantity of correspondence regarding perpetual motion schemes, they reasoned, then there must be many thousands of individuals who receive similar inquiries, usually soliciting an investment of some sort. Fearing that many of his readers may be wasting their money in this way, Gernsback offered this challenge to the perpetual motion entrepreneurs: "Just come in and show us—merely *show* us—a working model of a perpetual motion machine and we will give you $5,000." He never had a successful taker.

Gernsback was willing to take on any inventor who he felt was touting a pseudoscientific machine. For instance, he devoted several pages of the March 1928 *Science & Invention* to the "Thought 'Konzentrator'," a device that Gernsback admitted "took the prize" among all the scientific swindles he had investigated. "In some of the other devices we exposed," Gernsback writes with grudging awe, "at least there may always be some remote question in someone's mind that 'there may be something to it after all.'. . . But The Thought Konzentrator, a German device . . . is without doubt the most preposterous piece of bunk that ever came to these shores. For the Konzentrator actually does nothing . . ."

Gernsback was not above hoaxing his own readers on occasion—but with commendable intentions. The September 1927 *Science & Invention* startled subscribers when it presented the straight-faced report that a German scientist named Dr. Kowsky had successfully invented a "gravity nullifier." So important was this discovery that Gernsback even accorded it the magazine's cover, which illustrated a charming blonde lounging in a porch swing supported only by an enormous white cube. Illustrated with diagrams and photographs of the machine and its inventor, the story, told with exacting verisimilitude, reported every detail of the discovery—including the names of numerous authorities and respected journals—that quartz crystals charged by a high-frequency current lost weight. So much so, in fact, that one large crystal actually managed to support a 35-pound mass. There was even a photo to prove it.

The following issue exposed the hoax. It was reprinted,

**Gernsback was willing to put his money where his mouth was. In the case of astrology, he had a standing offer of $6,000 that would be awarded to "the astrologer or forecaster who will foretell three major events of such a nature that he will have no control over the outcome of the same."**

Gernsback admitted, from the April Fool's number of a German magazine. Had his readers examined the photographs closely, he pointed out, they would have seen that none of the electrical equipment made the least bit of sense. Moreover, they would have noticed that the wire supposedly connecting the quartz crystal to the weight wasn't even touching the latter! "The moral," Gernsback reminded his readers, "is that we should not believe everything we see, but do a little original thinking ourselves, because we may never know, otherwise, what are facts and what are not."

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WRNY
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**$6,000.00**

**For Proofs of Astrology**

**SCIENCE AND INVENTION Magazine holds that there is nothing scientific in Astrology, that Astrology is not a science and that statements made by astrologers unless very general cannot be entertained seriously.**

**Accordingly, this publication has decided to award an Astrology Prize for $6,000 for the following:**

**$5,000 will be paid to the astrologer or forecaster who will foretell three major events of such a nature that he will have no control over the outcome of the same. He must describe in advance each event in detail, giving the location and result or the casualties if the event is an accident.**

**$1,000 will be paid to the astrologer or forecaster who will produce three accurate, detailed and perfect horoscopes, free of contradictions on the lives of three people whose initials will be given him when he requests the same and the birth dates and place of birth will also be supplied by this office.**

**This contest closed October 1st, 1927, and further announcements will be made.**

**Address all entries to Editor, Astrology, care of SCIENCE AND INVENTION Magazine, 230 Fifth Avenue, New York, N. Y.**

# Alternative Medicine and Pseudoscience

## *Comments of a Biophysicist*

*Many claims of alternative medicine practitioners and paranormal investigators are at odds with scientific knowledge. A biophysicist deals with the biophysical aspects of these claims, some widely known, some specific to the Czech Republic.*

VOJTĚCH MORNSTEIN

A compiete definition of alternative medicine or pseudoscience is very difficult or almost impossible. So-called alternative medicine is usually characterized as a set of therapeutic and diagnostic modalities that are inconsistent with scientific knowledge (or ignore it intentionally). This definition is not correct because alternative medicine also often involves methods commonly used in evidence-based medicine. We acknowledge the usefulness of massages or relaxation, the potential for chiropractic therapy to treat lower back pain, and the relative or absolute effectiveness of many herbal remedies. Any alternative medicine method can help patients in a certain sense (it works—say the proponents triumphantly) due to the placebo effect or to substances or

procedures that appear also in evidence-based medicine.

Similar problems are encountered when defining pseudoscience. For example, UFOlogy may be nonsense or a question of blind faith, but we cannot absolutely rule out contacts with extraterrestrials in the future.

With the exception of mathematicians, nobody can give evidence that a particular phenomenon does not exist, work, or happen. We cannot prove the homeopathic remedy has no positive effect on the patient; we can only ask for sound evidence of it. We can ask what the results of double-blind placebo-controlled trials are. Without getting into all the details, I am going to discuss the distortion of scientific—especially biophysical—knowledge in individual branches of alternative medicine.

We can start with the concept of energy. This concept is commonly used not only in sciences but also in pseudoscience and most branches of alternative medicine. Most alternative medicine authors use that word only symbolically (i.e., the term *energy* is an equivalent of *élan vital* for them), not as a defined physical quantity. Therefore, *energy* becomes an example of semantic confusion characteristic in postmodern thinking. This confusion could be fatal for people without education in sciences. In physics, energy is a clearly defined quantity; in the alternative medicine world, usually nobody wastes time searching for any definition. *Energy* appears here as a magic word used for various things, ranging from the patient's good mood to something radiant that allegedly emanates from the healer's hand.

Energy has various physical and chemical forms. In principle, it means an ability of a system to do work—mechanical, electrical, magnetic, chemical, etc. Therefore, it is not a radiant fluid, which can be seen only by certain people and poured from one person to another like water from one cup to another. The presence or absence of such "alternative" energy is often detected by dowsing rods or pendulums, or someone's outstretched hands.

"Negative energy" is a term commonly used in alternative medicine and related pseudosciences. It is said to cause diseases or similar problems. From the viewpoint of biophysics, the energy cannot be primarily positive or negative for humans. The same kind of energy can be harmful or useful, mainly depending on the amount absorbed in the body. There are also no specific terrestrial or cosmic energies; no energy is specific for living systems. Alternative healers often feign that such specific vital energy really exists. They use various names taken from mysticism or oriental religions—*od, orgon, mesmerian magnetism, prana, chi*, etc.

Now look at some common forms of alternative medicine to discover what evokes such serious doubts in scientists.

## Homeopathy

Hahnemann's medical myth is the most vital branch of alternative medicine today. The principles "similia similibus curantur" and "infinitesimal dilution" are resistant to any scientific criticism, although they are inconsistent not only with science but also with sound reason. The biological effectiveness of highest homoeopathic dilution (e.g., one part in $10^{30}$ and higher) is the most prominent problem because in such a case no molecule of the alleged remedy is present in the homeopathic drug. I don't have space to discuss the so-called constitutive remedies, which utilize a single universal remedy for *any* health problem of the patient.

Experiments of professor Jacques Benveniste on the action at the cellular level of homeopathic dilutions of biologically active substances were published in *Nature* in 1988. This important attempt to verify homeopathic principles scientifically ended in a fiasco when tested under scrutiny of an independent commission.

Some homeopaths try to clear their conscience and link homeopathy to natural sciences. They attempt to explain the activity of an absent substance, imagining information spots encoded in water structure. According to them, these characteristic spots, fingerprints, appear in solution, and are multiplied by potentiation, i.e., shaking the solution after each dilution. Are these spots some specific changes in the so-called cluster structure of water? Are they stable in time? Is it possible to remove a molecule of a diluted substance from the solution and maintain the existence of its spot at all? Nobody has answered these questions satisfactorily. A considerable stir arose in connection with sensitive chemical analyses of high

*Vojtèch Mornstein is head of the Department of Biophysics, Medical Faculty, Masaryk, University of Brno, Jostova 10, CZ 662 43 Brno, Czech Republic. E-mail: vmornst@med.muni.cz.*

homeopathic dilution, in which no molecule of the "mother tincture" can be present. Traces of chemical substances that were not present in pure (non-potentiated) solvent were also found. How can these be scientifically explained?

One explanation was given by Kenneth Suslick, who is a top specialist in investigation of the chemical and mechanical effects of ultrasound. It has been known for a long time that intense ultrasound causes oscillations of microbubbles in water. This phenomenon is called *cavitation.* It can be evoked also by turbulent streaming of water. The oscillating microbubbles collapse vigorously and the temperature inside the microbubble increases rapidly up to thousands of degrees centigrade. It is high enough to produce free radicals, starting a chain of chemical reactions. In pure water irradiated by ultrasound under aerobic conditions, it is possible to find free oxygen and hydrogen, hydrogen peroxide and superoxide, nitrous and nitric acids. It is clear that these substances also can be produced by shaking the water, because it is accompanied by turbulent streaming, in which the cavitation as well as its chemical products must be present.

We can also describe a homeopathy-like method called spagyric (or Cellhelp, cluster medicine). It was invented in Germany and then exported to the Czech Republic. Several dozen Czech physicians deal or dealt with this pure quackery. This is the principle: At first, an organic substance that has something to do with a patient's disease (an excrement, purulent matter, etc.) is burned. The ash is then dissolved in water. A "diagnosis" is based on the microstructure analysis of crystals growing up from the evaporated solution—different crystal shapes are allegedly typical for different diseases. Of course, to date nobody has shown any scientific evidence of that. This diagnosis is pure clairvoyance veiled by pseudoscientific babbling. Water distilled from the ash solution—the so-called "dot"—is used as a remedy. Therefore, the previously mentioned and rejected information spots would be destroyed by burning at first, and then by evaporation and condensation of water again.

## Acupuncture

Acupuncture is based on an ancient Chinese tradition which is interesting, though without scientific validity. Acupuncture is relatively effective in resolving pain and in some psychosomatic problems. Of course, the needle insertion is a much more invasive procedure than, for example, swallowing a homeopathic remedy. We cannot argue scientifically with an acupuncturist who believes in the yin-yang principle, because we cannot argue with knowledge based on faith. A discussion becomes possible when the European or American acupuncturists start to search for a way to combine acupuncture with modern medicine.

Let us admit that there are many nerve endings or ganglia near the body surface which can be stimulated to influence some physiological functions. For example, it is commonly known that by pressing a point under the nose we can avoid sneezing. However, the number of such points is very limited. No success was achieved in searching for specific local morphological structures which could be identified with hundreds of the so-called acupuncture points and meridians used. Even the measurement of electric impedance in these points seems dubious because it is easily influenced by the electrode contact pressure and area, humidity, and thickness of skin or placement of the electrode. There are possibly points of lowered impedance in which the tissue can be stimulated more easily than at other points. However, are these points the same as the alleged acupuncture points? No one can answer this question without being puzzled. It is sufficient to keep in mind that (a) different acupuncture systems exist, and that (b) it is extraordinarily difficult to find the correct position of points because of individual body differences.

Partial effectiveness of acupuncture could be explained psychologically (distracting the patient from his pain or illness) or on the basis of reflex nervous mechanism or endorphin release—no special acupuncture points are then necessary.

The "electroacupuncture according Dr. Voll" (EAV) is not only interesting—it is even horrible in light of medical ethics. It is often used in Germany and the Czech Republic but similar methods are practiced all over the world. In this method, on the basis of unclearly measured impedance of acupuncture points, some electrical impulses of special shape are formed to achieve specific healing action. I had an e-mail discussion with a Czech inventor of an EAV system for healing a diabetic's foot about two years ago. The man was absolutely convinced that the system is the best method of healing, but he was not able or willing to correctly describe the principle of measurement and therapeutic action. This method is also used to test homeopathic remedies or so-called *nosodes*—very diluted solutions of harmful substances used for "therapy." The ill person holds a closed glass bottle in his or her hand (!) that contains the tested remedy. The electric response measured in an acupuncture point determines the applicability of that respective remedy. The remedy can be even simulated by electric impulses generated by a computer, because the homeopaths deal only with information carried by the remedy. It is not a joke, but a pseudoscientific rapture of healers and physicians which may easily earn money by fraud.

The analogy I make is that of a television repairman. The service man, say, uses an oscilloscope to measure electric voltages in more or less arbitrary parts of the surface of a non-functioning TV set. The voltages measured are modified and sent back into the TV set. Is it possible to repair it in this way? Can we hope for a successful repair of something much more complex, i.e., the human body, using the same procedure, in principle?

## Paranormal Healing and Psychic Healers

These terms encompass a mixture of healing procedures, which exploit imaginary energies, supplied (the positive energy) or removed (the negative energy) by healers. Some healers shake off the negative energy from their fingers, use a flame, or simply wash their hands to remove the harmful negative energy. The pendulum is a very important diagnostic tool for them because they use it to get the "right" diagnosis. So-called automatic drawing, Kirlian photography, clairvoyance, and astrology are also used for diagnostics. The healing "energy" is often concentrated or focused by talismans, models of pyramids, or

various Indian, Celtic, Egyptian, Christian, and other symbols.

Healing based on the alleged healing force of noble metals and gem stones, or the so-called *mumiyo* coming from Middle Asia, etc., are very similar. This "energetic" principle is also used in distance healing (e.g., television healers). Some producers offer instruments "able to receive" this energy from powerful healers. One such product, of Czech origin, looks like a credit card.

The healing potential of psychic healers can be explained only by suggestion. For a scientist, the absence of acting energy is the basic problem. There is no real energy that could directly influence the patient's bodies and be measured by objective physical, chemical, or biological methods.

## Healing Diets and Nutrition

I will not discuss nutrition systems based on real knowledge about the body and that are beneficial for health. But certain extreme diets (for healing or slimming, for example) ignore real needs of the body and replace them with fictitious ones. As a rule, these diets are naive conceptions based on incorrect or insufficient knowledge of physiology. Besides macrobiotics, which can cause vitamin or protein deficit, these are mainly:

- Diets containing "live" enzymes. They are based on the idea that enzymes are able to pass through alimentary tract without losing their natural activity. The digestive process is ignored. A refined form of this diet is modern enzyme therapy. Of course, the enzymotherapeutic remedies are at least protected against the action of gastric juice, and perhaps a small amount of them could penetrate into the tissues of our body. However, enzyme therapy does not belong among proven therapeutic methods.
- Vegan and fruitarian diets. They cause lack of some amino acids or vitamins, unless these are consumed in food additives.
- Urine consumption. According to the gurus of this dubious diet, the nitrogen-containing waste substances present in urine can replace nitrogen from proteins. The urine is also compared with homeopathic remedies for it contains traces of substances created during various diseases. Urine consumption is not propagated only by the uneducated. The Czech author of books about urine therapy, Jiri Cingros, worked in Czech diplomatic services, in Russia at first, later (several years ago) even as the Czech ambassador to Yemen. After he became suspicious of some illegal business activities in the embassy, he simply disappeared, leaving behind only bottles containing urine of the embassy employees.
- Cleansing diets. They are often combined with enemas. All our diseases are explained on the basis of deposition and fermentation of waste substances. The bacterial infections are denoted a secondary process. Bacteria simply grow and proliferate in the deposits, helping so to remove them. Where is the whole knowledge of microbiology and the legacy of Pasteur?

There are many areas on the boundaries of science that can be also considered pseudoscience when applying rigorous criteria. They always contain elements of blind faith and pseudoscience mixed with legitimate results and the honest effort to solve problems or at least give evidence of these problems. Here are two quite different examples:

(1) Biophoton radiation theory—an idea about information exchange between living systems or their parts by weak light radiation. Some microbiologists try to find it in bacteria or other microorganisms. They also consider communication by sound signals. In my opinion, results of these experiments are invalidated by inadequate methodology. The contemporary controversy about the so-called Fröhlich radiation, which seems to be synonymous with the biophoton radiation, represents evidence of poor communication between physicists and biologists. As a biophysicist, I think that the physicists investigating this radiation don't have the relevant knowledge about the complexity of living matter. In contrast, biologists are not able to oppose and falsify this theory (in Popper's sense).

(2) Ecological activism—naive ecological thinking and forcing of controversial measures for environmental protection. These activists argue, for example, that carbon dioxide causes a measurable greenhouse effect, but they ignore the existence of natural temperature oscillations in the past. Roughly the same community battles for animal rights. It is again a mixture of reasonable thinking and pseudoreligious beliefs. I cannot agree with killing of animals for entertainment or to obtain luxurious furs. However, reasonable usage of animal models for testing of anticancer drugs seem unavoidable to me. Further, more or less the same group of people protests against genetically manipulated foods. Why? It is well known that mankind has performed genetic manipulations for centuries by breeding. This movement, very strong in Europe, is probably not driven only by fear of genetic and health dangers, but also some well-hidden economic interests of the agricultural lobby. Anti-nuclear movements struggle against nuclear power plants, protesting the deleterious effects of ionizing radiation. I belong among the people who think of nuclear energy as a necessary evil on the way to less dangerous, alternative, but powerful enough sources of energy. Consider that only a small part of emitted solar power reaches Earth's surface! Why not take more of this energy and utilize it outside Earth to avoid its unnecessary heating? However, this goal cannot be reached without modern functioning industry—and nuclear energy—because the fossil fuels, such as coal, oil, and natural gas, are limited. That is why the radiophobic anti-nuclear movements are misguided.

## Conclusion

It is dangerous when the people promoting alternative medicine and paranormal activities have scientific erudition. Some even work in universities and research institutions. Many other scientists are tolerant or neutral, unable to recognize or combat lies mimicking sciences. However, they accuse the skeptics of intolerance instead of supporting them. Most of the "independent" media and postmodern philosophers attack skeptics in the same way. I am worried by the possibility that genetically manipulated food will be forbidden today, all animal experiments tomorrow, and the day after tomorrow, homeopaths or shamans will become members of surgical teams. Considering the economic interests of media, the populism of policymakers, the decreasing level of students' knowledge of then natural sciences, this nightmare is not as improbable as it may appear. □

# Are Skeptics Cynical? Popular Misunderstandings of Skepticism

*Many people seem to confuse cynicism with skepticism, and believe that critical thinking results in a negative attitude about life. However, this opinion rests on a number of mistaken assumptions about the nature of skepticism. Skeptics must correct these misconceptions if they hope for the wider application of critical thinking.*

PHIL MOLE

One afternoon, after sending an e-mail refuting various urban legends, I received an interesting response from a friend who received my message. She thanked me for correcting so much misinformation, but also commented in passing that I seemed to be "somewhat of a cynic." Why was I a cynic, I asked? In her reply, she cited my apparent unwillingness to believe anything on faith. She construed my habit of questioning ideas and information presented to me as a general pessimism about life.

This misinterpretation of my viewpoint was puzzling, because I've almost always considered myself an optimist. I genuinely think the world is an amazing place, and I imagine I could spend upwards of five lifetimes exploring its

wonders. I'm practically immune to depression. In spite of what the evening news and *Lifetime* movies seem to indicate, I even believe most people are basically good. To my mind, all of this demonstrates me to be a pretty optimistic guy. But to my friend, and to many other acquaintances I've made throughout the years, my skepticism sufficiently proves me to be a cynic at heart.

*Cynicism* is a general negative attitude about life—a feeling that things will pan out for the worse. *Skepticism* is simply applied critical thinking, especially with regard to unfounded or poorly established claims. The two terms have no relationship. Why then do many people confuse skepticism with cynicism, and equate any attempts to think critically with a gloomy outlook? Generally, most people have several misconceptions about what skeptics do, and these misconceptions tend to make them view us in an unflattering light. This article will examine some of these misconceptions, and attempt to respond to each of them.

**Why do many people confuse skepticism with cynicism, and equate any attempts to think critically with a gloomy outlook?**

### Misconception #1: Skeptics Consider People Who Don't Share Their Beliefs to Be Stupid

Skeptics often demonstrate the evidence for many claims to be unreliable, or even nonexistent. When this occurs, believers in these claims at times attack the alleged attitude of intellectual superiority associated with skeptics. They claim skeptics are just a bunch of haughty know-it-alls who look down on everyone who disagrees with them. Doesn't each person have a right to his or her own opinions? Since skeptics criticize the ideas of others, they must be guilty of arrogance and contempt for their fellow human beings.

Needless to say, there are many problems with this view of skeptics. While skeptics are human, and may sometimes show insufficient sympathy for believers of dubious claims, there is no necessary link between skepticism and intellectual arrogance. Skeptics should, and often do, recognize true believers as human beings with understandable feelings and motivations. Exposing the falsity of a claim does not compel us to cynically conclude that the claimant is morally or intellectually inferior.

In fact, many of the most prominent proponents of pseudoscientific theories are highly intelligent, and possess advanced academic or professional degrees. The creationist Hugh Ross, for instance, has a Ph.D. in astronomy, and the Ayurvedic "healer" Deepak Chopra is a licensed physician. These are not the credentials of simpletons. The truth of a claim is quite independent of credentials, or the claimant's apparent intellectual abilities. Smart people can and do commit logical errors that only careful skeptical investigation can reveal.

Why do so many people think that skeptics are pessimistic and elitist when they insist on the critical evaluation of ideas and evidence? I think the answer has something to do with the comforting relativism, especially prevalent in American society, that tells us that all ideas have equal validity. As the famous French writer Alexis de Tocqueville observed in his classic book *Democracy in America*, citizens in a democracy tend to confuse two concepts. They think that their right to hold their own opinions somehow makes all opinions equal. Of course, nothing is further from the truth. A right to hold a belief does not entail a guarantee of its truth, and does not imply immunity from critical examination. In fact, pursuit of truth requires the rational evaluation of competing truth claims in a spirit of free inquiry. Some ideas are better than others, and skepticism is simply the methodology for assessing the merits of different truth claims. It follows that those who are trained in the methods of critical thinking will be better skilled at this task than those who lack such training.

Training in critical thinking is important because, as cognitive researchers such as Massimo Piatelli-Palmarini have shown (1994), innate cognitive biases often seem to impair our judgments. To see examples of some of these cognitive biases in action, let's suppose we flip a coin ten times and record the numbers of heads and tails. We perform this exercise twice, and obtain the following results:

1) H T H T H H T T H T
2) T T T T H T T T T T

Which of these two series is more likely? Think it over, and remember your answer. Now, suppose we vary the number of coin flips in each series. We record the following two strings of outcomes:

3) HTTHTTHH
4) HHHHH

Again, choose the outcome you think is more likely, and remember your answer.

If you chose (1) and (3) as being the most statistically likely, you're in good company. The overwhelming majority of participants in studies like this have chosen identically, and I may add, incorrectly. The first two series are equally likely, since the probability of each coin flip outcome being either

*Phil Mole has a masters degree in public health from the University of Illinois at Chicago. He frequently writes about issues relating to science, philosophy and religion, and lives in Elmwood Park, Illinois. He may be reached at p.mole@att.net.*

heads or tails is one-half, and we obtain the probability of the series by multiplying the probabilities of the individual coin flip outcomes together. Therefore, series (1) and (2) have equivalent probabilities of $(.5)^{10}$, or (1/1,024). And against our best common sense, series (4) turns out to be *eight times* more likely than series (3). Once again, the only statistically valid way to determine these probabilities is to find the product of the individual coin flip outcome probabilities. When we calculate this, we find that the probability of series (3) is $(.5)^8$, and the probability of series (4) is $(.5)^5$.

Our natural tendency is to view (1) and (3) as being more "typical" results because they contain an equal number of heads and tails. The pattern fits our conception of what a string of fair coin toss outcomes *should* look like. But our natural tendency is wrong. Furthermore, as Piatelli-Palmarini points out, cognitive errors such as this occur independently of the subject's degree of professional or academic education. People considered experts in statistics often perform more poorly than those of us with no training in statistics at all. Clearly, there's more involved in thinking critically than just being smart.

Thus, skeptics who insist on critical analysis of ideas are not being cynical or snobbish. They realize that human thinking is fallible, and desire reliable methods for making judgments. Someone who does not understand these methods is not necessarily stupid, any more than someone who lacks medical training is stupid. We all have our different skills and aptitudes, just as a doctor and an engineer have different areas of competence. Are we being snobbish if we go to a doctor when we are sick instead of going to a car mechanic or an engineer? Does our preference for the doctor's opinion imply that we think the car mechanic and engineer are stupid? Of course not—we just recognize that there are judgments a doctor is best qualified to make. Similarly, skeptics simply insist that people who have training and skills in critical thinking and a willingness to think diligently are best qualified to evaluate ideas. Such insistence implies nothing about the intelligence or worth of people who do not share the skeptic's viewpoint or abilities.

## Misconception #2: Skeptics are Closed-Minded, and Think That Logic and Science Can Explain Everything

Skeptics reject insubstantial evidence and insist on the primacy of science for answering questions about the empirical world. However, some people extrapolate these characteristics to reach mistaken conclusions about the motivations and purposes of skepticism. To them, the dismissal of flimsy evidence demonstrates that skeptics close their minds to any evidence conflicting with their own beliefs. Additionally, they misread the skeptic's esteem for scientific inquiry as a naïve belief that science and logic can explain everything.

Good skeptics do not simply reject evidence conflicting with their current beliefs. They do sometimes dismiss certain claims out of hand, but only when these claims are identical or extremely similar to claims already disproved beyond any reasonable doubt. Skeptics are willing to consider good evidence or arguments in favor of a claim, but the burden of proof is always on the claimant. There are many unsubstantiated claims out there, and skeptics cannot possibly evaluate all of them. Just as a plaintiff must present evidence that his or her allegation is not frivolous before the court will consider it further, the supporters of a controversial new idea must try to argue that their ideas are worthy of review.

Of course, if a skeptic decides to look more intensively at a claim, he is under no obligation to accept it as true. As discussed previously, there are standards for evaluating ideas, and not all ideas are equal. Some ideas deserve rejection. But ultimately, true skepticism involves assessing a claim on its own merits, and not arbitrarily rejecting it. Skeptics do not dogmatically declare certain ideas impossible, even when they involve paranormal phenomena such as ghosts, extrasensory perception (ESP), or extraterrestrial visitations. As physicist Phillip Morrison has argued, nothing is too wonderful to be true (1997). Many scientists once strongly doubted the validity of revolutionary ideas that now form the very backbone of modern scientific thought: heliocentrism, natural selection, relativity theory, and plate tectonics, to cite a few examples. But many of the same scientists eventually accepted these theories, since they proved to be valuable, empirically supported explanations. Skeptics follow the scientific method in giving provisional assent to those theories that best match the evidence and allow us to make the most accurate predictions. The degree of support can always change depending on new evidence and/or the explanatory powers of rival theories.

It is instructive to contrast the provisional nature of skepticism and science with the comparably dogmatic acceptance of many pseudoscientific beliefs. Astrology still has its loyal supporters, even though innumerable studies have demonstrated no correlation between astronomical signs and personality, and believers in astrology are routinely unable to recognize their own astrological profiles. Most of these believers express no interest in reviewing these studies, or irrationally claim that scientists and skeptics are conspiring to belittle astrologers. By the same token, how many believers in the psychic abilities of Nostradamus have ever actually read any of his alleged "predictions," and how many of the paranormal faithful have taken a good, earnest look at the "evidence" for the existence of Bigfoot, the Loch Ness monster, or extraterrestrials? If they really believe as much as they say they do, why would they fear or resent an honest examination of the facts? When confronted with these questions, many paranormalists will simply say the equivalent of, "I believe what I believe, and that's that." While they're entitled to hold beliefs unsupported by science or logic, it seems fair to find them guilty of the charges of closed mindedness they unjustifiably hurl at skeptics. Although paranormalists often accuse skeptics of "explaining away" all the mysteries in life, they themselves stubbornly grasp at tidy supernatural explanations for any phenomena they do not understand.

Science, unlike pseudoscience, is keenly aware of the limitations of human knowledge. Contrary to what many people believe, skeptics insist on the application of critical thinking because they know that science cannot explain everything, and want the knowledge revealed by the scientific method to be as

reliable as possible. As Immanuel Kant argued over two hundred years ago, all of the information we obtain about the world registers in our minds indirectly and imperfectly, through our senses. Furthermore, our perception of the world is influenced by extra-rational factors, such as emotions or hormonal fluctuations. However, Kant also showed that these limitations do not prevent us from obtaining a reliable and self-consistent body of knowledge. Skepticism is one of the major tools for ensuring the integrity of this knowledge.

There can be, and must be, things that science is unable to explain. Is it possible that our fallible human minds, crafted through millions of years of natural selection acting upon imperfect starting materials, can comprehend everything about the universe? Many questions may ultimately prove to be solely metaphysical, such as why there is something in the universe rather than nothing, or whether there is a God. It should also be obvious that science has little to say about the meanings of many of our most sublime human experiences—the feelings associated with love, or stimulated by contact with great works of art. Then again, these experiences never constituted the proper subject of science in the first place. Science is concerned with explaining the world we live in, and skepticism is one of its most important methods.

**Skeptics who insist on critical analysis of ideas are not being cynical or snobbish. Are we being snobbish if we go to a doctor when we are sick instead of going to a car mechanic or an engineer? Skeptics simply insist that people who have training and skills in critical thinking and a willingness to think diligently are best qualified to evaluate ideas.**

### Misconception #3: Skeptics Try to Undermine Religious Faith, and Show That Life Is Hopeless

According to popular opinion, science and skepticism seem to conflict with hope and faith. Many people seem to fear that skepticism reveals a world without purpose. To some degree, I can understand and sympathize with this fear. After all, many former tenets of religious faith, such as geocentrism and the Biblical creation story, now stand discredited. Furthermore, some scientists and skeptics periodically make unwarranted metaphysical and theological judgments based on scientific theories. Stephen Hawking, in his fine book *A Brief History of Time*, contends that modern cosmological theories may demonstrate the absence of a Creator. Some skeptics also tend to lump all forms of religion in with irrationalism and superstition.[1] Needless to say, religion is one of the main expressions of human hope. When skeptics belittle religion, they lead many people to the conclusion that skepticism is incompatible with the search for meaning and spiritual fulfillment.

Still, there is no unavoidable reason why skepticism should undermine our deepest hopes. We can say this confidently for two reasons. First, skepticism cannot definitively disprove the existence of a deity. The concept of God is so subjective, and so variable from one person to the next, that it's difficult to imagine how skeptics could ever disprove the existence of God beyond all reasonable doubts. While skeptics have disproved many religious claims with specific empirical consequences, such as the Biblical creation account and the global flood of Exodus, general belief in God probably cannot be falsified or verified to the satisfaction of all rational people. "But wait," some skeptics may be asking, "what about the theory of evolution by natural selection? Doesn't evolution reveal a universe without design?" The answer is that evolution has as much, or as little, consequence for belief in God as any other established scientific theory. This is true even though organic evolution encompasses the entire known biosphere. To see why, consider the fact that all living creatures are made of cells, and cellular mitosis and meiosis govern the life cycles of these cells. It follows that cellular mitosis and meiosis, in direct ways, then govern the entire living world, but most of us would find it odd if a scientist claimed that this fact proved there was no God. Any natural process can form part of a theist's image of the Creator's actions and purposes. As William James would say, personal belief in God remains a "live option," because the evidence does not, and probably cannot, overwhelmingly contradict it.

Second, even if skepticism does challenge some religious beliefs, there are no consistent connections between theological belief and optimism. Very many devout believers have held profoundly negative views of life, and many agnostics and atheists have been quite cheerful. Of course, some theists maintain that their belief in eternal life is the only thing that makes life bearable for them. It should be clear that this is nothing more than a statement about their own lack of happiness in the life they already possess. Is it reasonable to expect that someone who is miserable during her short time on earth will become permanently happy in a life extended indefinitely?

Anyone who believes that critical thinking undermines happiness is a cynic in disguise. Since critical thinking is an essential tool for revealing truths about our world, the person who claims that skepticism erodes his happiness is essentially saying that *the truth erodes his happiness.* She would prefer the world to be different than it really is. We can reasonably conclude that a person could only hold such a thought if she felt negatively about the world she lives in. But since few people like to think of themselves as pessimists, they have to try hard to convince themselves that the world really is the way they imagine it to be.

They would like very much to ignore all evidence to the contrary, and they may become defensive if their selective interpretation of life comes under closer scrutiny.

Needless to say, such scrutiny often does reveal a number of pessimistic details about their allegedly rosy view of life. Consider the fact that many theists who consider themselves quite optimistic believe that a large percentage of humanity is essentially wicked, and will face eternal damnation for their sins. And then there is the content of the e-mails that many so-called optimists believe unquestioningly. Many of these e-mails are urban legends spreading false and dangerous misinformation. According to these urban legends, for example, Taiwanese people snack on human embryos and Congress is a moral cesspool filled with criminals and public leeches. These aren't exactly cheery notions, but someone who abandons critical thinking has no defense against them. They unthinkingly accept them, and consider themselves blissful optimists all the while. Such is life without skepticism.

I hope I have shown that cynicism and skepticism have nothing to do with each other. A skeptic has no obligation to unfairly judge others, and does not close his mind to contrary opinions. Most important, skepticism need not threaten human hopes, religious or otherwise.

Cynicism is an attitude about life, while skepticism is a method for uncovering facts about life. Anyone may incorporate those facts into a general philosophy of life as he or she best sees fit, but we'll all be better off if those facts have firm foundations. Skepticism is the best means of ensuring the reliability of our knowledge, and I don't think it's too optimistic to hope for its wider application in the realm of ideas.

## Note

1. See, for example, Joseph L. Daleiden's book *The Final Superstition: A Critical Evaluation of the Judeo-Christian Legacy* (Buffalo: Prometheus, 1994). As the title implies, Daleiden views theism as the last major obstacle in the path of rationalism.

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## *Hypothesis Testing and the Nature of Skeptical Investigations*

*From page 30*

statistically savvy) skeptics, this is the formula (I promise, the only one in the article):

$$\lambda = \left( \frac{1 - R_1^2}{1 - R_2^2} \right)^{n/2}$$

where $\lambda$ is the likelihood of hypothesis 2 when compared to hypothesis 1, $R$ is the amount of information (variance) in the data explained by each model (hypothesis), and $n$ is the sample size (number of observations). Simple and powerful, it grows on you.

### A New Philosophy of Science

So, next time you run an experiment, think in terms of several alternative hypotheses and analyze the data accordingly. This is a major shift in attitude for scientists and skeptics, and one that will become more common as more people are exposed to it. It will take decades for the textbook-entrenched standard approach to dissipate; science and scientists can be very conservative in their habits of mind. Yet, it simply makes sense to think of progress in science not as the rejection of uninformative hypotheses, but as a continuous competition among different solutions to a problem. This is the way scientists actually think, despite their frequent use of statistical methods that do not reflect such thinking. Eventually, some hypotheses will be discarded—not necessarily because we know for sure that they are wrong, but because they failed the test so many times that their likelihood is rapidly approaching zero. (That's why it is ludicrous for somebody believing in pseudoscience to pretend that skeptics actually test *every* potential case of telepathy or psychokinesis.)

By the same token, the likelihood of certain hypotheses will become so high, because of their continuously successful fit to the data, that we will regard them as true beyond reasonable doubt, at least for the time being.

One important lesson for the skeptic is that within this philosophical (in fact, Bayesian) framework, the likelihood of an hypothesis is never exactly zero or one (100%), so that one always needs to keep an open mind about things: you never know if new data will knock down the likelihood of a favorite hypothesis, or suddenly raise the probability of an almost discarded one. On the other hand, we are free to bet a beer on the (provisional) conclusion that there is no such thing as telepathy.

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# Skeptical About *The Skeptical Environmentalist*

RICHARD M. FISHER

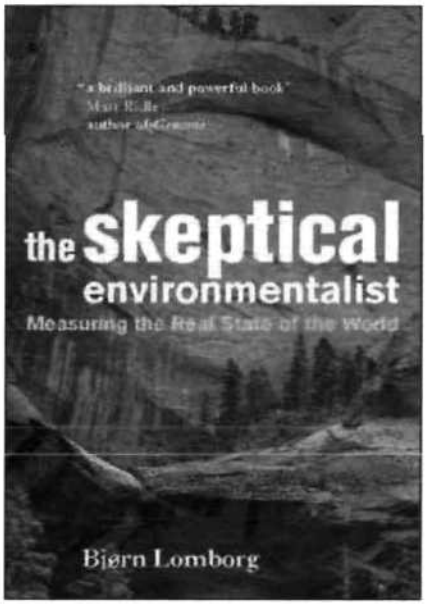
*The Skeptical Environmentalist: Measuring the Real State of the World.* By Bjorn Lomborg. Cambridge University Press, London, 2001. ISBN 0-52101-068-3. 496 pp. Hardcover, $28.

Shortly before he died, astronomer and science popularizer Carl Sagan wrote a wonderful book called *The Demon-Haunted World: Science as a Candle in the Dark* (Sagan 1996). The book is both a personal odyssey of a distinguished scientist's twilight and a beacon of reason in a world awash with irrational beliefs and superstition. Among the most important gifts that Sagan bequeaths us in the book is his "baloney detection kit." The kit is a handyman's tool set for skeptical thinking, and includes instructions for recognizing fallacious or fraudulent arguments. Among the instructions:

- wherever possible obtain independent confirmation of the facts
- encourage substantive debate on the subject by knowledgeable persons
- spin more than one hypothesis
- ensure that every link in a chain of argument works, not just most of them

The baloney detection kit also includes extensive advice on what *not* to do. It is based upon fallacies of logic and rhetoric, some simple, others more complex. My personal favorite among them is *misunderstanding the nature of statistics,* with Sagan's example of President Dwight Eisenhower "expressing astonishment and alarm on discovering that fully half of all Americans have below average intelligence."

I had occasion to revisit Sagan's baloney detection kit in the context of reading *The Skeptical Environmentalist,* a book by Danish statistician Bjorn Lomborg. Lomborg's book has attracted remarkable negative comment from the scientific community, juxtaposed with positive gushes from the popular press. *The Washington Post* calls it "the most significant work on the environment since the appearance of its polar opposite,




Rachel Carson's *Silent Spring,* in 1962" (Dutton 2001). Similar kudos are offered by *The Economist.* In contrast, there has been a plethora of negative reviews of the book in scientific journals, including the heavyweights *Nature,* which calls it "deeply flawed" (Pimm and Harvey 2001), and *Science,* which disapproves of Lomborg's selective use of data (Grubb 2001). Other negative reviews have appeared in more specialized science journals, such as *Environment* (Gleick 2001) and *World Watch* (Bell 2002). Among the most vociferous critics has been *Scientific American,* which countered with its own debunking article (Rennie 2002), including rebuttals by a coterie of scientific heavyweights, all of whom refute Lomborg's claims.

The gist of the scientific feedback against Lomborg is that he displays wilful ignorance, quotes selectively from the works of others, and, perhaps above all else, courts the attention of media that accept his work at face value, in an uncritical manner (Wilson 2001). The oddity is that the book, while claiming to be a skeptical review of a wide body of "doomsaying" environmental studies, should itself be subject to a healthy dose of skepticism. A reasonable layperson is likely to look askance at Lomborg's claims that virtually every environmental indicator is better than scientists claim, including world hunger, global warming, forest depletion, species extinction, loss of nonrenewables, acid rain, as well as water, air, and wastewater pollution. A reasonable person is also likely to view with marked disbelief

*Richard M. Fisher, Ph.D., LLB, is a scientist and lawyer. He teaches at International Pacific College in Palmerston North, New Zealand. E-mail: RFisher@ipc.ac.nz.*

Lomborg's claims that all that bad news is the result of a directed and concerted cabal of environmental pressure groups to conceal the truth. In a nutshell, the truth may be out there . . . but not in this book.

How then do we explain the ability of someone who has admitted having no scientific training or expertise comparable to those he attacks to attract such favorable press? Canadian scientist David Suzuki suggests that it is because Lomborg assuages guilt about ecological problems (Suzuki 2002). In contrast to current United Nations reports which paint a pretty dismal picture about the state of the environment, Lomborg tells us what we prefer to hear: namely that things are a lot better than pessimistic scientists would have us believe.

More important than all of this, from the SKEPTICAL INQUIRER's point of view, is finding the answer to Lomborg's success through his use of the toolkit advice offered in *Demon-Haunted World*. By that advice, I refer specifically to things Sagan warns us *not* to do. *The Skeptical Environmentalist* is a textbook example of the anti-science toolkit in action. As such, it is extremely illustrative. Here are some of those tools and how they have been (ab)used, chosen (due to length restrictions) from a single chapter in Lomborg's book which deals with biodiversity.

## Straw Man

According to Sagan, a straw man fallacy is "caricaturing a position to make it easier to attack." Lomborg uses a more subtle variation on this theme, by finding an early, erroneous or exaggerated scientific viewpoint, and then treating it as though it were still mainstream. In particular, he quotes from the work of a scientist who stated in 1979 that we could be losing something in the order of 40,000 species a year to human-driven extinction. To increase the caricature, Lomborg reprints the 40,000 species number on an X-Y graph so that the 40,000 figure spikes up like a sore thumb from a near-zero baseline from the years 1600–2000. Lomborg states that this "is a figure which with monotonous regularity has been repeated everywhere until in the end we all believed it." The problem is, it hasn't, and we don't (Lovejoy 2002). However, by emphasizing that 40,000 figure again and again, Lomborg tars with the same brush other, more current studies which still show an alarming loss in biodiversity over time.

In creating his straw man, Lomborg also engages another of the anti-science tools, *observational selection*. Sagan describes this as enumerating favorable circumstances by counting hits and avoiding misses. Lomborg refers to the 40,000 number repeatedly, without referring to the body of work of the scientist in question, carried out in eighty-plus published papers over the course of a twenty-year period (Myers 2001).

In *Demon-Haunted World*, Sagan talks frankly about himself, and other scientists, who occasionally get it wrong. The truth is, scientists make mistakes. Among those Sagan himself acknowledges was his belief that when Iraq torched Kuwaiti oil wells in 1991, the smoke might be enough to disrupt agriculture. While it did get dark at noon, and while Persian Gulf temperatures did drop several degrees, not enough smoke reached the stratosphere to cause serious long-term disruption. Sagan got it wrong (thank goodness).

Unfortunately, when a scientist is premature in making conclusions, or is simply wrong in the published literature, the paper stays around, bound somewhere on a library shelf, where it can be quoted many years later, as Lomborg has done. Never mind that there are more current figures: a past mistake may have been found, and thus the whole body of literature respecting biodiversity loss is suspect. This also illustrates two more of Sagan's anti-science tools: *slippery slope*, whereby letting even one, possibly exaggerated species-loss figure slide by without trashing the entire field may lead to complete chaos, and *suppressed evidence, or half truths*, wherein a claim that has been "caught out as poorly supported" is trumpeted with appropriate fanfare, at the same time as other claims in the same area are swept under the carpet, or given short shrift.

## Argument from Authority

In the context of Lomborg's book, arguing from authority means garnering support from leaders in the field, especially if their support for you can be given without revealing their own existing prejudice in favor of your point of view. The English language version of Lomborg's book includes a number of favorable comments by various researchers reprinted on the covers. Most noticeable of these is the praise of researcher Matt Ridley. The words "a brilliant and powerful book," appear in big, bold print on the front cover, above the book's title, being a quote from "Matt Ridley, author of *Genome*." Ridley is no slouch in the science field, and it would be tempting to conclude that his praise is high praise indeed from an impartial genetics researcher. Unfortunately, what isn't stated anywhere in *The Skeptical Environmentalist* is that Ridley is also a past editor of *The Economist*, and is very much a believer that economic progress can go hand in hand with environmental improvement. This is in fact a very contentious view, and is opposed by many in the field of sustainable development. How do we know Ridley believes this? Because he says so himself, in a followup letter in support of Lomborg published in *Scientific American* (Ridley 2002). Ridley may be right in encouraging a stronger linkage between economic development and sustainability, but that's not the point. Many people will see his support on the cover of *The Skeptical Environmentalist*, but only as the author of a popular book on genetics, and therefore out of context.

## *Ad Hominem* Attacks

Lomborg decries what he perceives to be a number of personal attacks on himself in the myriad reviews that conflict with his own point of view. That may be in part a misplaced perception on the part of

anyone who is an inexperienced gladiator in the scientific arena. As Sagan points out in *Demon-Haunted World*, scientists aren't there to be the friends of new theorists. They are there to test new views, to challenge them, to ensure that they are robust. However, Lomborg himself slips into the tactic of attacking the arguer, rather than the argument, when he states in his biodiversity chapter that the basis of opinion of biologists' arguments is that "there are many grants at stake."

## Inconsistency

An example of the inconsistency principle, described in *The Demon-Haunted World*, is the belief that it is "reasonable for the Universe to continue to exist forever into the future, but judge absurd the possibility that it has infinite duration into the past." This is arguably the most oft-repeated complaint lodged against Lomborg's book. In addition to selective use of data, critics argue that Lomborg is inconsistent in his use of global or regional trends, and switches from one to the other where it pleases his argument. This produces interesting results when talking about percentages. Remember our "40,000 species a year" scientist? Lomborg is determined not to let him off the hook, and repeats this number several times in his biodiversity chapter. However, whenever Lomborg talks about the "true" state of biodiversity loss, he consistently expresses it as a percentage, or rate of loss. His reason for doing so is because that is the way biodiversity loss is measured these days. If so, however, why keep trotting out that old 40,000 species a year figure? Lomborg trumpets his own figure of 0.7 percent species loss per fifty years, with a sigh of relief. Things aren't as bad as we have been told. But with his own acceptance of current species numbers, Lomborg's estimate would still amount to thousands of species lost every year. It just doesn't *sound* as bad when it's expressed as a rate of loss. This begs the question: should society be any less galvanized to take action against a biodiversity loss of several thousand, as opposed to scores of thousands of species annually? Apparently so, according to Lomborg, who considers that losing 0.7 percent of all species per fifty years is a lot rosier than 40,000 species a year. Thank goodness for percentages!

As you can see from the above analysis, people like Lomborg can get quite a bit of mileage debunking science. The anti-science tools I've mentioned are just a few in the larger collection Sagan sets out in *The Demon-Haunted World*. They can be quite fun to use, as a destructive exercise. Earlier in the last century, for example, we could have had a good crack at Einstein, on the basis of his lousy school record, paucity of published papers, unexplained holes in his work, such as the existence of dark matter, and that unusual, funky hairdo. Anyone who uses *c* as a mnemonic for the velocity of light must be seriously unstuck.

**Lomborg himself slips into the tactic of attacking the arguer, rather than the argument, when he states in his biodiversity chapter that the basis of opinion of biologists' arguments is that "there are many grants at stake."**

On a more serious note, I wish I could conclude by saying that Lomborg's book has had some benefit to science, perhaps by way of emphasizing the need for robustness in modeling, or the need for critical evaluation of data. As it happens, those already are central tenets of scientific inquiry, as they have been throughout the history of environmental debate. All that Lomborg has accomplished is to try, without much success, to expose the soft underbelly of science. That underbelly is the uncertainty that invariably accompanies the initial investigations of natural and physical phenomena. That's why the study of problems like global warming is so easy to attack. There is now general consensus that global warming is a genuine phenomenon, but the uncertainty among studies as to its scope and speed provide more than enough ammunition for those determined to seek weaknesses in the arguments, and thus dither away while the problem intensifies.

Unfortunately, the only groups that will be served by Lomborg's book will be the pro-development and anti-environmental lobbies. No doubt they've been clamoring for a "feel good" book like this, after all the bad news. I've already seen the book trotted out at globalization meetings hosted by private interest groups favoring free trade. In sum, I'd give Lomborg's book a pass. Go to the public library and check out *Demon-Haunted World* instead.

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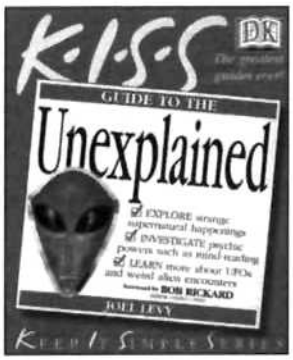



# Simplified Skepticism Suffers

BENJAMIN RADFORD

*K.I.S.S. Guide to the Unexplained.* By Joel Levy. DK Publishing, Inc. New York, New York, 2002. ISBN 0-7894-8941-4. 288 pp. Softcover, $20.

My friends and family have generally had the good sense to avoid giving me gifts that insult me. I don't get cleaning products, for example, or deodorant soap. I also don't get books whose titles begin with "The Complete Idiot's Guide to. . . ."

There are several series of these sorts of how-to or introductory books, including the "For Dummies" guides and the "K.I.S.S.: Keep It Simple Series." These guides have apparently been a publishing gold mine. At first the books focused mostly on technical matters that one actually did need expert guidance for, such as computers and home repair. But soon any topic at all was grist for the idiot mill, resulting in books like *The Complete Idiot's Guide to Spirituality for Teens* and *Guide to Making Money Through Intuition.* (SKEPTICAL INQUIRER published a review of *The Complete Idiot's Guide to Being Psychic* in SI 23 [5], September/October 1999.)

There are a lot of things I know little or nothing about, but I'm not keen to announce my idiot status to fellow shoppers at Barnes and Noble (or, preferably, a small independent bookstore), or those who may pass by my bookshelves. I have flipped through the guides on occasion, just to see what the idiots were reading, but never spent much time on them. So when I came across the *K.I.S.S. Guide to the Unexplained,* I was about to toss the book on the shelf or send it to our bulging Center for Inquiry Library. However, I stopped my wrist in midswing and cracked the book open to give it a look. Instead of the usual patchwork of credulous paranormal pap, I found a surprisingly skeptical treatment of unexplained phenomena.

Using the now-typical format of slick stock photos, cutesy cartoons, and colorful illustrations, author Joel Levy covers a wide variety of topics, divided into four sections: Mind (ESP, precognition, etc.); Spirit (ghosts, spiritualism, the occult, etc.); Natural Mysteries (dowsing, pyramid power, Bigfoot, etc.); and Aliens & UFOs (Roswell, abductions, etc.).

There may have been a few uncomfortable moments around the publisher's conference table as the series producers looked over the manuscript and saw the skeptical comments therein. For example, Levy correctly notes that tests of astrology "have given almost entirely negative results," and, as for feng shui, "careful research has cast doubt on the existence of ley lines" (which Levy ties in with feng shui). These conclusions might be disconcerting to the authors of other books in the K.I.S.S. catalog on astrology and feng shui. We are reminded that publishers are not arbiters of truth but instead are happy to sell books endorsing opposite sides of an argument.

On the whole Levy seems to accept skeptical explanations, and steers the reader away from magical thinking and toward scientific answers. The book includes a short section on the satanic abuse scare and false memory syndrome, as well as good skeptical checklists (such as for ordinary objects that might be mistaken for UFOs, as well as "the most common mundane causes of ghost phenomena").

Despite its refreshing skepticism, *K.I.S.S. Guide to the Unexplained* also has plenty of non-sequiturs and head-scratchers, such as Levy's claim that "There is evidence that even small cardboard pyramids seem able to sharpen dull razor blades and preserve food. A Czech inventor, Karel Drbal, has been granted a patent for manufacturing styrofoam pyramids for use as razor sharpeners." Let me get this straight: Levy accepts the *granting of a patent* (from 1952) as real evidence for an unproven phenomenon like pyramid power? Occam's razor doesn't need sharpening with pyramid power.

This is perhaps the most frustrating thing about the book: It frequently arrives at rational, skeptical conclusions (albeit at times equivocal ones), but in the process it also makes incomplete or dubious statements. In several places Levy writes that a certain piece of evidence has "never been proven fake." He states this about several things, including stigmatic Padre Pio's bleeding wounds and the 1967 Patterson Bigfoot film. Levy is correct, but the implication is that the burden of proof lies with skeptics to prove that evidence is faked, when in fact it is the claimant who must prove the evidence is real.

There is a fundamental and insurmountable problem with this sort of "keep it simple" approach to the unexplained: none of the topics are simple. If the explanations (both for and against) paranormal phenomena were simple, then the phenomena would most likely be explained. In this field it is especially true that, as they say, the devil is in the details. By Keeping It Simple (or making it for Complete Idiots), discussion of paranormal topics is oversimplified and reduced to the equivalent of textual sound-bites. Important points and caveats are lost or glossed over in favor of a quick blurb.

*Benjamin Radford is a writer and Managing Editor of the SKEPTICAL INQUIRER.*

Another facet in any book on unexplained phenomena is the inclusion of topics that, by the author's own admission, are in fact explained. One clear example is the Cottingley Fairies photographs, in which two English girls took photographs of paper cutouts of illustrated fairies and claimed the fairies were real and visited them. Sir Arthur Conan Doyle, among many others, believed the girls and the photographs. This is not to say that such books should exclude solved mysteries; indeed, it is instructive to see how other people, many more learned that we are, were fooled by their perceptions or assumptions.

But it does raise the question of when something is explained, and to whose satisfaction. Many of the topics presented here (and in other books) *have* been explained. Skeptics have explanations for most or all of the "unexplained" topics; not all will be the absolute truth or final word, of course, but skeptics can and do report what the scientific method reveals about strange happenings. The question is whether believers will accept those explanations.

The promise made on the first page, that "by the end of the book, you'll be an expert yourself!" is clearly wrong. (*Fortean Times* editor Bob Rickard, in his foreword, sensibly reminds readers to "be wary of anyone calling himself an expert in the unknown; there aren't any.") Entire books have been written about each topic, and to have anything but the most superficial understanding requires more than the three or four short sentences Levy affords.

The guide includes an index, a glossary, a list of Web sites, relevant magazines (including this one), and organizations. The book reference list is good but far too short for a subject of this size. The Committee for the Scientific Investigation of Claims of the Paranormal is briefly mentioned, as is SKEPTICAL INQUIRER, though Levy cites James Randi as being CSICOP's highest profile member; in fact Randi hasn't been part of the organization since 1991.

It's hard to heartily recommend this K.I.S.S. Guide, though hard to really condemn it either. Given the wide range of topics Levy had to survey (and the very short space in which to summarize it), he has done a good job of presenting the skeptical view. This book is ostensibly for the lay reader, and if a curious reader is going to read an introduction to the unexplained, this book is certainly better than most of its ilk. Given the popular appeal of the book, on balance the book's credits outweigh its debits. □

# SCIENCE BEST SELLERS

## Top Ten Best Sellers in **New York**

1. ***Authentic Happiness: Using the New Positive Psychology to Realize Your Potential for Lasting Fulfillment***
   Martin E.P. Seligman
   Free Press
2. ***A Mind at a Time***
   Mel Levine
   Simon & Schuster
3. ***A New Kind of Science***
   Stephen Wolfram
   Wolfram Media
4. ***Fast Food Nation: The Dark Side of the All-American Meal***
   Eric Schlosser
   Houghton Mifflin
5. ***On the Shoulders of Giants***
   Stephen Hawking (Editor)
   Running Press
6. ***Guns, Germs, and Steel: The Fates of Human Societies***
   Jared Diamond
   W.W. Norton and Co.
7. ***Merriam-Webster's Collegiate Dictionary***
   Merriam-Webster, Inc.
8. ***The Universe in a Nutshell***
   Stephen Hawking
   Bantam Doubleday Dell
9. ***The Art of War***
   Sun Tzu, Samuel B. Griffith
   Oxford University Press
10. ***Seeing in the Dark: How Backyard Stargazers Are Probing Deep Space and Guarding Earth from Interplanetary Peril***
    Timothy Ferris
    Simon & Schuster

By arrangement with Amazon.com, September 2002.

*Listing does not preclude future review.*

***Denying Evolution: Creationism, Scientism, and the Nature of Science.*** **Massimo Pigliucci.** Sinauer Associates, Sunderland, MA 01375. 2002. ISBN 0-87893-659-9. 275 pp. $24.95, softcover. A valuable fresh look at the evolution-creation controversy by a young evolutionary biologist immersed not only in evolution but also in the philosophy of science and education. He labels creationists "those who deny evolution," much in the sense of holocaust-denyers. He insightfully examines creationism as a form of anti-intellectualism, showing its historical roots. He also criticizes scientists for focusing solely on research rather than helping improve textbooks and education, ignoring the anti-evolutionists rather than engaging and confronting them, and presenting a somewhat misleading, overextended picture of the reach of science (scientism) to the media and public. He uses his broad and deep knowledge to dissect creationist arguments and reveal creationist fallacies, including recent manifestations in the "intelligent design" movement and other major claims and components of the evolution-denial controversy.

***Duelling Idiots and Other Probability Puzzlers.*** **Paul J. Nahin.** Princeton University Press, 41 William Street, Princeton, NJ 08540. 2002. ISBN 0-691-10286-4. 280 pp. $18.95, softcover. Twenty-one probability problems by a professor who teaches the subject. None have appeared in print before, to his knowledge, at least in this form. Although conceptually not difficult, he nevertheless considers them in a group of "more challenging, more interesting" problems. Examples: The curious case of the snowy birthdays, a different slice of probabilistic pi, the blind spider and the fly, and when negativity is a no-no.

***Heuristics and Biases: The Psychology of Intuitive Judgment.*** **Edited by Thomas Gilovich, Dale W. Griffin, and Daniel Kahneman.** Cambridge University Press, 40 West 20th Street, New York, NY 10111-4211. 2002. ISBN 0-521-79260-6. 857 pp. $110, hardcover. Is your case strong enough to go to trial? Will interest rates go up? Can I trust this person? In the late 1960s and early 1970s a series of papers by Amos Tversky and Daniel Kahneman revolutionized academic research on everyday human judgment. Their central idea was that judgment under uncertainty often rests on a limited number of simplifying heuristics rather than extensive algorithmic processing. This book is intended as an update or successor to the influential 1982 book on the subject *Judgment Under Uncertainty: Heuristics and Biases*, by Kahneman, Slovic, and Tversky. Each of the contributions is connected to this heuristics and biases approach to the study of judgment under uncertainty. Much has happened in the field since 1982, and the editors say this book is an attempt to capture many of the most important contributions and developments. Forty-two papers—some pre-existing, some new—by seventy-three contributors deal with such topics as the conjunction fallacy in probability judgment, sympathetic magical thinking, compatibility effects in judgment and choice, probability judgment across cultures, the dilemma of unrealistic optimism, two systems of reasoning, the hot hand in basketball, and one, by Gilovich and Savitsky, that appeared originally in SI, "Like Goes with Like: The Role of Representativeness in Erroneous and Pseudoscientific Beliefs."

***XTL: Extraterrestrial Life and How to find It.*** **Simon Goodwin with John Gribbin.** Cassell & Co., Wellington House, 125 Strand, London WC2R 0BB, United Kingdom. 2001. ISBN 0-304-358-975. 191 pp. $29.95, hardcover. Excellent, beautifully illustrated science book exploring the possibility of, as well as the conditions necessary for, life on other planets. The authors, both astronomers and writers, say they hope to provide readers with the background information to enable them to participate fully in the excitement of the search for extraterrestrial life (XTL) over the next few years. Main chapters cover our home in space, planet beyond, probability of life, homes from home, and searching for civilizations.

*—Kendrick Frazier*

* * *

Only rarely does a music compact disc pop up with any real relevance to skeptics, though not one but two recent recordings found their way to our offices.

**George Hrab's release *Vitriol* (Geologic Records, 2001)** combines warped humor with clever lyrics and a decidedly skeptical / rationalist point of view. Of particular interest to skeptics are tracks such as "Skeptic" (sample lyric: "your astral projections are coming along / your chakra and chi are both growing real strong / your cold disappeared after nine short days / thanks to the words on the whole earth displays") and "Speak to You," which challenges TV mediums such as John Edward who claim to speak to the dead. Why, he asks, would dead loved ones only speak to their grieving relatives through a fast-talking, glitzy medium in a television studio?

Trying to describe the "sound" of Hrab's music is pointless, so I'll just pass on how he describes it: "a bizarre amalgamation sometimes described as rock-folk-rap-jazz-fusion-prog-acoustic-funk-hiphop-world-classical-pop-retro-electronic-fat free music." For what that's worth.

The fourteen tracks include "Monkey Hip Dysplasia," "Cruel Spines," "Simple Simian," and "Shoe." Of the best non-skeptical songs, "I Want a Nun" is a sophomoric, sacreligious gem in the vein of Frank Zappa, and "B3: brainsbodyboth" describes the quest for women who are not just beautiful but intelligent as well. Overall worth a listen for skeptics and the curious alike.

On the other end of the spectrum, sort of, is **Jim Richardson's *Gonzo Science* (Earthology Records, 2001)**, a CD which, according to the cover, offers "science heresies, rogue paradigms, and phat beats." The songs are mostly Richardson giving short, quasi-rhythmic, quasi-logical expositions on various paranormal topics, backed by what are apparently the aforementioned "phat beats."

Tracks include "Down With the Big Bang," "MoFo Aquatic Ape," "Cryptozoology," "Carl Sagan: Buzzhound," and "Debunking the Skeptics." One of the best, or at least most listenable, is "So You've Seen the Virgin Mary," a somewhat tongue-in-cheek account of Virgin Mary sightings around the world.

Richardson seems firmly planted in heretical science, with a perhaps too-open mind. Along the way he takes some select straw man swipes at skeptics, with bald statements such as, "In their zeal to defend the mundane, skeptics have developed a pathological aversion to the anomalous." If listening to a chipmunk voice discuss the criteria of adequacy—and warn you about the fallacy of the appeal to tradition—sounds like fun, this is your CD.

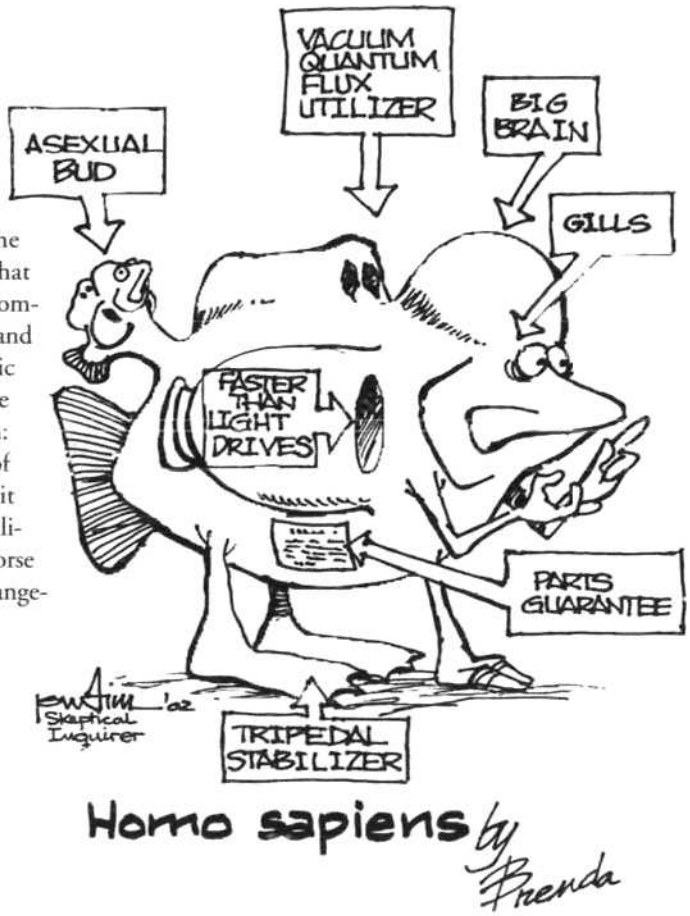
*—Benjamin Radford*

# Unintelligent Design

PAUL GILES

By now we've all heard the theory put forward by proponents of "intelligent design." It's the proposition that some being of infinite intelligence, supreme power, and, I can only assume, massive ego created our universe and the life in it. They're not saying this being is God, but the job description implies there are no other serious candidates for the position, needing just the qualification "only those of unfathomable mystery and a deep, booming voice need apply" to clinch the deal.

Recently serious consideration has been given by the State Board of Education of Ohio, where I currently live, to include intelligent design in the science curriculum, making Ohio the latest battleground in the war between evolution and creationism. Since these camouflaged creationists were creeping up so close to home, I decided to examine intelligent design in the same manner as its proponents. That is, without any scientific proof or peer review but with a healthy dose of imagination and chutzpah. After hours of research on the Internet and twice that long trying to rid my computer of pop-up ads and unbidden pornographic Web pages, I came to the only logical conclusion: If there was any sort of plan for everything, it was the most unintelligent design possible, worse even than, say, a televangelist's hairstyle.




**If there was any sort of plan for everything, it was the most unintelligent design possible.**

Let's examine intelligent design's two major premises. First is the belief that this all-powerful, all-knowing being who is not God (to avoid sexism let's call this entity Brenda) created the universe specifically to make it hospitable for life. Intelligent design proponents call this the anthropic principle. Fair enough. Brenda creates the heavens and the Earth. But how intelligent is her cosmological design? Not very. For one thing, everything is too far away. Fourteen billion light-years to the edge of the universe, and getting farther every second? Puh-lease! How are we supposed to get there when Brenda has set the cosmic speed limit below that of light? That's not very good planning. Even nearby Andromeda, the closest galaxy to our own Milky Way, is 2.2 million light-years away, one heck of a long commute. If he started today, Dick Clark would

*Paul Giles is a humorist, speaker, and comedy writer. He can be contacted at paul4laffs@adelphia.et.*

look old at the end of the trip.

Within our immediate neighborhood things don't improve much. The nearest star to our sun is Proxima Centauri, 4.3 light-years distant, with no rest stops, gas stations, or convenience stores between the two. To make it even more challenging, there's no air . . . in my opinion a very serious oversight.

Our own solar system, while relatively compact, is still a traveler's nightmare. It takes our fastest probes years to reach the outer planets, and once we get there we find frozen rocks or giant balls of gas. Even with a bit of elbow grease, new curtains, and a lot of redecorating advice from the Home and Garden Network we still wouldn't want to set up housekeeping on Neptune or Saturn.

The inner planets are almost as inhospitable. Mars may only be friendly to microbial life. Venus is caught in an endless loop of a runaway greenhouse effect, and Mercury's surface temperature is over 420 degrees Celsius, although they say it's a dry heat. For us, at least in the foreseeable future, Earth is our only home. I'd have to say the design of our universe is not only unintelligent, it's cosmo-illogical.

The second major premise of intelligent design is that life, especially *Homo sapiens*, is too complex to have just happened. It was to produce us that Brenda supposedly used the lion's share of her wisdom and power. But are we any better than if we had "just happened?" Were we built from the best blueprint? Did the builder even bother to look at the plans before starting work? And did she use the finest materials available, or did she underbid with an eye to buying on the cheap, thinking no one would be the wiser, like some sleazy, fly-by-night home improvement company or government contractor? I'd say she was indifferent at best. The design of *Homo sapiens* is extremely unintelligent.

**If we were designed by Brenda then a class action consumer lawsuit should be filed immediately for damages, both real and punitive. She should be made to correct all our defects, issue an apology, and promise to stay out of the creation business.**

Let's look at the facts. To begin with we're bipedal. That means when we're young we fall down a lot. And when we're old we fall down a lot. I'm neither, and I fell down twice yesterday. When we're not falling down we're very slow, unable to outrun predators even with $300 athletic shoes. In the upright position we're constantly banging our heads on door jams and tree limbs and anything else above the level of better designed quadrupeds. No, bipedal was not the smart way to go.

Second, we can't breathe water. Why is that important? Think about it—what lunatic would make us so we can only breathe oxygen, then put us on a planet which is 75 percent water? Hello? Anybody home in there? Brenda gave us a useless organ like the appendix, but couldn't throw in a couple rows of gills? All knowing, indeed.

Third, there's the problem of sexual reproduction. Requiring two people to make offspring is so inefficient. And painful. And messy. Sexual reproduction breeds not only children, it breeds resentment. As my wife is always quick to point out, the male's contribution to the process is insignificant, can be accomplished in just a few minutes, and unfortunately usually is. The female then spends the next nine months in discomfort awaiting the birth. The male, on the other hand, blithely gets on with his life of drinking beer, bragging about his fertility, and enduring no pain greater than the slight inconvenience of being told by his wife how *he* should try carrying all that extra, unbalanced weight around on a bipedal body without falling down.

Now if Brenda was an intelligent designer, we'd reproduce asexually. The advantages are clear. There'd be no stigma to being an unwed mother since we'd all be unwed mothers. No one would have to worry about not having a date on New Year's Eve because we'd each be the object of our own desire. There would be no controversy over cloning since we'd all be able to make exact genetic copies of ourselves, and how many of us haven't at one time or another thought, "This world would be a much better place if everyone was just like me?"

Fourth, who but sadistic automobile and computer manufacturers would design a creature with so much built-in obsolescence? We get sick, we grow bald, we get fat, we lose our visual acuity, our teeth fall out, our skins sag, our bones become brittle, our sexual performance fades (which wouldn't matter if we were asexual, by the way), our brains shrink, our arteries clog, our senses dull, our memory becomes unreliable, and then our children stop visiting us. If we were designed by Brenda then a class action consumer lawsuit should be filed immediately for damages, both real and punitive. She should be made to correct all our defects, issue an apology, and promise to stay out of the creation business for a period of five billion years, and then only under the watchful eye of a governing board of experts in the field.

Lastly and most tellingly in the argument against intelligent design is the fact that we think. We experiment, we discover, we theorize, we extrapolate, we predict based on our observations. If we really were the result of a master plan, Brenda would have made us unthinking, so we could never doubt her existence. Intelligent design? Hardly. At least not until I can breathe under water with my very own gills.

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# It's a Good Thing Cows Can't Fly in Mobile

RALPH ESTLING

A gentleman from Mobile, Alabama, airmails a letter in which he "feels compelled" to tell me that "sadly" (why sadly? He seems rather pleased about it) I know little about science and nothing about physics.

Unfortunately for this cogent perception he then goes on to give his own telling insights—not into my ignorance, where he'd be on pretty safe ground—but into his very own grasp of physics. At that point his letter suffers a blow from which it never really recovers. But the man from Mobile serves a useful purpose, if not the one he intends, for he got me to thinking about thinking and what we and our physicists do with it and to it.

It seems to me that the most important difference between a good thinker in general and a good scientist in particular, on the one hand, and a bad thinker, bad scientist, philosophers, metaphysicians, theologians, paranormalists, and True Believers, on the other, is that a good thinker and a good scientist spend a lot of their time and effort checking to see if they could be wrong, while all of the others haven't the wit to realize that 1) you *can* be wrong; and 2) if you are it's much better to discover this yourself, rather than having someone else do so. Not so with bad thinkers. Bad thinkers are too busy preaching to take time out to ask themselves if their little homily is on track or not. If someone else has the temerity to ask them, then they reply yes, of *course* they are right, how could it be otherwise? The logic that underlies this is not absolutely clear to me.

It also seems to me that people do altogether too much preaching. I am impatient with people whose sole concern with ideas is to preach their own, having no interest in learning anything. I'm not condemning them for not wishing to learn anything from *me*, I'm condemning them for not wishing to learn anything from *anybody*.

So, as I don't like preaching, let me proclaim that I believe physics must reflect (as far as humanly possible) underlying reality, for otherwise it isn't physics but a sort of intellectual mush, a physics of make-believe and let's-pretend. I'm sorry if this sounds dogmatic but there's a point where dogmatism is called for, or we drown in the swamp of relativism, with its neither thisness nor thatness but just a great amorphous blob of anything-you-likeness, which means an end to all possible search for reality in the universe and a descent into the hell of pseudo- and quasi-science. The universe is complicated enough without our creating even more, and unnecessary, obscurity, obscurantism, and opaqueness, and please, do not confuse *relativism* with *relativity*.

The grinning ape that leers back at us each time we gaze into a mirror is telling us something and we ought to listen.

In his latest book for the masses, *The Universe in a Nutshell*, Stephen Hawking writes that as a positivist "the question 'Do extra dimensions really exist?' has no meaning. All one can ask is whether mathematical models with extra dimensions provide a good description of the universe."

Positivism has its beginnings in the late eighteenth century with Immanuel

*Our frequent columnist Ralph Estling writes from Ilminster, Somerset, England.*

Kant's *diktat* that we can never hope to know the "thing-in-itself," the actual nature of reality. The best we can ever do, and our best is none too good, is acquire some vague inklings through the obscuring and distorting filters of our five senses, and our understanding must therefore be greatly diminished. By the end of the nineteenth century all manner of mechanical aides were available to extend our senses, especially that of sight, far beyond their natural, very limited range, so that, for example, the entire electromagnetic spectrum, from radio waves to gamma rays, and not merely the narrow band of visible light, could be detected, studied, and understood. Other devices were being invented and developed so that for the first time in human history the beginning of a real insight into the nature of the universe was now a possibility. Oddly, just at this time, just as our ability to discern something of things-in-themselves was burgeoning, the philosophical pasture of positivism suddenly took root among many physicists. I don't know why and perhaps somebody can enlighten me for it seems a remarkably perverse step. Quantum mechanics certainly gave positivism a big boost but QM came later, it was not the cause of *fin-de-siècle* positivism.

Positivists such as Hawking tell us that reality cannot be dealt with or even comprehended, therefore we can only deal with what we can measure in some way. At first glance this seems like eminently sensible or at least practical advice, until we watch as our physicists slowly slide down the slippery slopes of solipsism where they tell us that only the *measurable* is *real*, only the *measurable* can truly be said to *exist*. If you can't count it or weigh it, then it's not there. This is quite another matter, one not so eminently sensible at first or any number of glances. But it bedevils physics and until its dead hand is lifted from it, physics (or rather, physicists) will continue to insist that vitally important questions have "no meaning" and that the best we can do is play with mathematical models. God's little helpers, the mathematicians, do indeed perform absolutely necessary work in physics. Without them you couldn't have physics. But if you let them take over and run with the ball, oh boy, can *you* get the wrong number! For mathematicians deal with an ideal world, one that cannot possibly exist, and this puts a definite limit to its range of real-life possibilities.

Possibilities are themselves another source of problems for physicists. It seems to me that physicists more than any other scientists are prone to take up a perfectly possible hypothesis (if it weren't perfectly possible it could not be a hypothesis) and expound on it until they too begin the alliterative descent of slippery slopes when, rather suddenly, the perfectly possible first is transmogrified into the probable and then, hey, presto, into the highly likely, all this without a shred of real, palpable evidence to call its own. Physics at the start of the twenty-first century is chock-a-block with all kinds of wondrous speculations about the underlying nature of that reality which we can never really discern, and the number grows almost daily. So, what have we, or they, in the way of evidence? Well, they have mathematical models. Thank you very much but I'm afraid that does not quite answer my question. And my fear grows that physicists are playing games, some of them a lot of fun, no doubt, but I'm not sure this is what physics should be, or at any rate should limit itself to.

For I can't help believing (call me a hopeless fool) that there is a real world out there and that what we see and study is part of it.

As to that other world, the world of positivists, well, what can we say except that it's a good thing cows and positivists can't fly. In Mobile, or anywhere else. □

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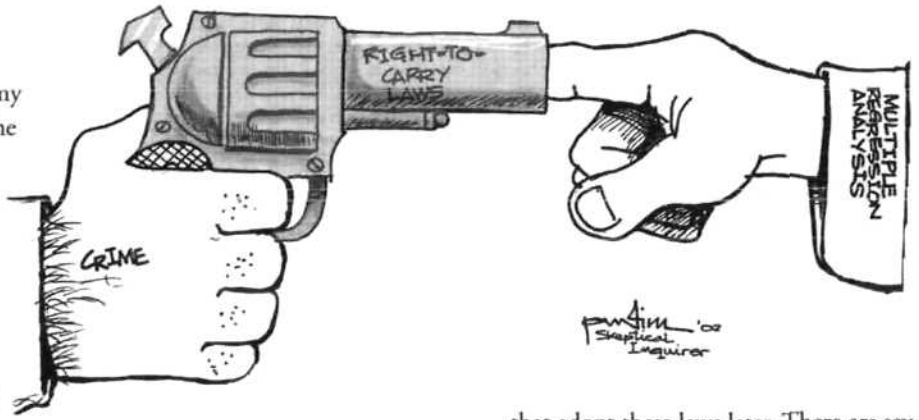
# Econometric Modeling, Guns, and Murder Statistics

JOHN R. LOTT, JR.

*In this Follow-Up column submission economist John R. Lott, Jr. responds to criticisms of his research using an econometric model to conclude that allowing citizens to carry concealed weapons deters violent crimes without increasing accidental deaths. The criticisms were in one section (pp. 20–21) of the article "Myths of Murder and Multiple Regression," by Ted Goertzel, SKEPTICAL INQUIRER, January/February 2002, Vol. 26 No. 1. Following that Ted Goertzel responds.*




Goertzel's main claim that my research "had no data for the major cities" is simply not a serious statement. The second edition of my book published in 2000 examined data for cities from Philadelphia to Houston to Dallas to Atlanta to Pittsburgh to Miami to Phoenix. Twenty states adopted right-to-carry laws during the 1977 to 1996 period. Even in the data from 1977 to 1994 in the first edition (published 1998), there were many of the same set of major urban areas. Many of my estimates in both editions specifically examined how the drop in crime varied across urban areas. I don't know how he could claim to have discovered that "no" urban areas were covered by the research.

It is also wrong to claim that the states adopting right-to-carry laws have primarily been "largely in the South, the West." For example, most of New England has these laws (Maine, New Hampshire, and Connecticut, and Vermont has no regulations at all). By the end of 1996, twenty-eight states had had these laws in effect for at least one full year and they are from all parts of the country.

As to the second quote by Zimring and Hamkins, I had a long discussion of this quote in both editions of my book (pp. 151–152 in second edition).

"The sort of state that passes a 'shall issue' law in the 1980s is apt to be the same kind of place where ordinary citizens carrying concealed firearms might not be regarded as a major problem even before the law changed. . . . Idaho is not the same sort of place that New York is, and there seem to be systematic differences between states that change standards for concealed weapons and those that do not." (Franklin Zimring and Gordon Hawkins. "Concealed-handgun permits: The case of the counterfeit deterrent." *The Responsive Community*, Spring 1997, pp. 50 and 51.)

Just because we observe a drop in crime for those states that have enacted these laws does not by itself imply that we will observe the same effect in other states that adopt these laws later. There are several different issues here. First, the regressions used in this book have attempted to control for many differences that can explain the level of crime (for example, income, poverty, unemployment, population and population density, demographic characteristics, law enforcement, other gun laws). Admittedly, even my long list of variables does not pick up all the differences between states, which is the reason that a variable is added for each individual county or state to pick up the average differences in crime rates across places. Individual time trends are also allowed for each state.

Yet despite all these attempts to control for variables some caution is still in order—especially when dealing with

*John Lott, Jr. is author of* More Guns, Less Crime *(2002).*

areas that are particularly extreme along these dimensions that do not have obvious counterparts in areas with nondiscretionary laws. One obvious comparison would be New York City. While the regression results show that the largest population and most densely populated areas gain the most from nondiscretionary laws, there is always the possibility that relationship changes for population and density values above which we have yet to be able to measure. To date, the fourth and fifth largest cities in the country now have these laws (Houston and Philadelphia) and additional experience with large cities may help determine whether these laws would be equally useful in a city like New York. If one were skeptical about the effects in large cities, the laws should first be changed in Los Angeles and Chicago.

A second issue was whether there is something unique about states that adopted nondiscretionary laws, and whether that characteristic caused them to adopt the law and also to reduce problems possibly faced from adoption. For example, if local legislators had special information that the citizens in their state were unique in how well they could be trusted with concealed handguns, it would have led these few states to pass the law and have little difficulty with it. It could then "falsely" appear that nondiscretionary law are generally successful. Such an argument may have been plausibly put forward at one time, but the force of the argument has declined as such large and varied areas are now covered by the laws. Equally important is the fact that not all jurisdictions have willingly adopted these laws. Many urban areas such as Atlanta and Philadelphia fought strongly against the laws, but lost out to a coalition of rural and suburban representatives. Philadelphia's opposition was so strong that when Pennsylvania's nondiscretionary law was first passed Philadelphia was partially exempted.

Of course my work specifically accounted for the factors noted by Goertzel in terms of NRA membership, geographic location, demographics, political affiliation, population density, etc. in trying to explain what states adopted the laws.

As to "crack-related homicides," I did not ignore this issue. Among other factors, I tried to account for variables such as cocaine prices (e.g., pp. 279-80, fn. 8 and pp. 30203, fn. 86).

It is not clear why Goertzel would review my work and act as if I had not written anything on these points. Indeed in discussion we had I noted all these points to him, even if he had missed them in reading my research, though he did not see fit either to acknowledge my responses or rewrite what he had done.

John R. Lott, Jr.
JLott@aei.org

## Ted Goertzel Replies to John Lott

When I started working on John Lott's data set, I decided to do what research methods textbooks universally advise: graph the trends to look for nonlinear patterns before attempting any complex statistical manipulations. I couldn't graph the trends for every county, so I decided to start with the ten largest cities in the country. These cities were central to the homicide epidemic, yet I found that none of them had enacted "right-to-carry" laws during the period covered in the analysis. There was simply no variation in Lott's key causal variable for these cities, which meant that regression analysis could not show anything about its effects there. This was nowhere mentioned in his book. Next, I graphed the trends in five counties that had enacted "right-to-carry" laws during the research period. Looking at the trends, it was apparent that the "right-to-carry" laws had no discernible impact. This graph, and several others, are available in a paper at http://crab.rutgers.edu/~goertzel/. I urge anyone who has any doubts about the issue to look at that paper; there is not space for me to reproduce the graphs in SI.

John Lott argues that his work "accounted for" the factors that I mentioned such as NRA membership, geographic location, and demographics. Of course, he is aware of and discusses these factors, especially in the second edition of his book. The point of my paper, however, was that the method he uses— multiple regression—is simply not able to "account for" factors in this way, at least not with real world data about social problems. This is not a new observation on my part, it has been widely recognized by specialists in research methodology. In a recent technical report, the distinguished statistician David Freedman states that "causal relationships cannot be inferred from a data set by running regressions unless there is substantial prior knowledge about the mechanisms that generated the data." (The report is available at www.stat.berkeley.edu/~census/601.pdf.)

With prior knowledge of the issue, one can explain Lott's findings quite easily: "right-to-carry" laws were passed in states that were not the center of the cocaine-related homicide epidemic, so their crime rates were lower on average than those in states that did not pass such laws. Of course Lott is aware of this problem, if only because critics have pointed it out to him. In the 2000 edition of his book *More Guns, Less Crime* he concedes that his critics' "concern over cocaine- or crack-induced crime is surely a legitimate one," and that "it is difficult to directly measure the violence-inducting

influence of cocaine or crack." (pp. 213–214). He then attempts to deal with the problem by introducing cocaine prices as a variable in his multiple regression analysis. But no amount of statistical manipulation can compensate for the fact that he simply had no data on the effects of "right-to-carry" laws in the big cities during the period when the cocaine-related homicide epidemic was most acute.

Lott is a true believer in a research method that simply cannot do what he wants it to do. Faced with criticism, he simply runs more regressions and studiously avoids the more fundamental methodological issue. This is not an unfamiliar pattern in the history of science. Scientists who have based their careers on a particular theory or method are often unable to accept its failure.

Ted Goertzel
Department of Sociology
Rutgers University
Camden, NJ 08102.
goertzel@camden.Rutgers.edu.a

# Response to 'The High Cost of Skepticism'

STANLEY BERENT

I write in response to "The High Cost of Skepticism" by Carol Tavris (July/August 2002). The article is a piece of advocacy, not analysis or even investigative journalism. As the author candidly admits, for instance, she is a friend to both Loftus and Guyer, and she never contacted "administrators or investigators to get 'their side'" before writing her story. Nevertheless, the story has the capacity to create misimpressions (and contains some outright errors) about me and my work. I write to correct them.

## My Memorandum to the University of Michigan IRB

Tavris implies that I wrote an unfair memo about Guyer's IRB (Institutional Review Board) application and that I played some role in "keeping it secret." The author has not quoted from the memo, choosing instead to use Guyer's somewhat inflammatory characterization of it. I have never disclosed the contents of the memo outside the IRB, and do not intend to so now, but I am constrained to make the following points:

• The memo did not reflect some spontaneous action on my part. Rather, I was asked as a committee member by the IRBMED (Medical School Institutional Review Board) and its chair in 1998 to address the Committee's concerns about the Guyer application and to list issues and implications presented by that application. The charge to me was made after the entire committee had discussed the matter, and reflected the group's concerns about the work and further questions the committee felt needed to be addressed. This was a committee decision, not mine.

• It should be mentioned that regardless of how the Guyer project was eventually classified, it was presented in 1998 at the IRBMED review meeting as a "research" project.

• The memo I prepared in response was a draft, internal work intended only to go to the IRBMED Chair, and was designated as "confidential." I had no part in the dissemination of the memo beyond the IRBMED Chair, knew nothing about its release to other parties, and cannot speak to the actions of those who released it.

• My memo specifically suggested that Guyer be asked to comment on the issues it raised about his research.

**As the author candidly admits, she is a friend to both Loftus and Guyer, and she never contacted "administrators or investigators to get 'their side.'"**

• It is not correct that my memo "excoriated Mel Guyer," as Tavris wrote, nor was it harsh or "filled with false innuendo, malicious insinuations, and outright falsities" as Guyer has suggested. The memorandum was fact-based, written in good faith, and in direct response to inquiries raised by the University's IRBMED. Consistent with the assignment to me by the Committee, I addressed the

*Stanley Berent, Ph.D., is a professor of psychology at the University of Michigan, Ann Arbor.*

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Committee's concerns regarding issues of methodology, timeliness of submission of the application to the IRBMED, and implications of the research. The memo outlined areas that were in need of further information and suggested that the investigator be asked to comment on how these issues were to be addressed.

### My Research on Solvent Exposure

In a "Postscript" to her piece, Tavris describes as an "irony" the fact that I and my colleagues received IRB approval for certain research I have conducted regarding solvent exposure in railroad workers. Tavris's treatment of my research is indeed "ironic," but not for the reasons she describes. I concur with Tavris's assertion that "Skeptical inquiry is endangered when those who are offended or threatened by knowledge are able to silence those who have something valuable to say." That is exactly what has happened to me since publication of my data.

From time to time, I have been retained by CSX to conduct evaluations of workers involved in civil litigation with that company over exposure to solvents. Separate and apart from that private consulting work, CSX partially funded retrospective, records-based research conducted at the University of Michigan regarding health implications of solvent exposure in railroad workers. This funding was to the University of Michigan and not to me personally. I participated in that research and, with my colleagues, published our findings in peer-reviewed journals. However, that research and those publications were not written for or at the behest of CSX or anyone else. It is simply incorrect, as Tavris asserts, that I was "hired by CSX or anyone else. It is simply incorrect, as Tavris asserts, that I was "hired by CSX and Dow" to conduct that research.

There are no parallels between my retrospective, record-based research and the incident described in Tavris's article. Before beginning our proposed work, my colleagues and I sought a waiver of consent process in order to perform a retrospective analysis of existing and anonymous records. Such a request is allowed under federal regulations (e.g., 45 C.F.R. 46) and in our case, after appropriate review, a waiver was granted. Tavris noted that I was a member of the IRBMED at the time my worked was approved, but she failed to mention that in keeping with institutional and federally mandated procedures, I was formally excused from participation in any discussion or decision regarding that review or its outcome.

It is also not the case that my research had, as Tavris suggests, "far graver implications for the dignity and welfare of his [*sic*, referring to me] subjects." The truth is that the formal and federally authorized group charged with assessing my research determined the proposed work was proper and imposed "minimal risk" (i.e., the lowest possible risk assessment) to the anonymous subjects whose data we analyzed.

My research yielded important information about solvent exposure. Those data may be of interest to parties in private civil litigation—but that is a byproduct of much scientific investigation in these litigious times, and was not the purpose or intent behind that research. Within the scientific community, the research was well received: one of the publications from our work received the Adolph G. Kammer Merit in Authorship Award from the American College of Occupational and Environmental Medicine.

It is true that complaints were made about my colleagues and my research, as referred to by Tavris. The genesis of these complaints appears to be plaintiffs' personal injury lawyers (or those affiliated with them) who are unhappy with the results of my research. Apparently unable to rebut that research on its merits, a small number of persons who feel threatened by the data have undertaken to discredit me and my colleague and to prevent others from undertaking similar research; they have submitted "complaints" to various entities, including the Department of Health and Human Services, and then taken care to advise newspaper reporters of those "complaints." Tavris may have unwittingly become part of those efforts.

**My research yielded important information about solvent exposure. Within the scientific community, the research was well received.**

It is correct that the University of Michigan responded to these complaints with several investigations in order to address the questions and concerns raised. In every instance, my colleagues and I were exonerated. The results of those investigations were forwarded to the Department of Health and Human Services, which, to my knowledge, has not taken any further action. As far as I am concerned, the matter is closed. If the reader is interested, more detailed information can be accessed on the University's Web site at www.med.umich.edu/opm/clinicalres/.

Finally, the author incorrectly states that I have taken early retirement. In fact, I continue to be active in my research, writing, administration, teaching and other activities at the University of Michigan.

# Reply to Stanley Berent

CAROL TAVRIS

Berent's letter is three times longer than the postscript I wrote about him in my essay, so I welcome the chance to reply and clarify. Because this debate exemplifies the larger *systematic* problems in academia and research these days, I hope readers will stay with me.

I have Berent's memo about the proposal in front of me. It is headed "Confidential Memo" in capital letters. I have this memo because it was—inappropriately and unethically, in my view—sent to Elizabeth Loftus's investigating committee at the University of Washington, where her lawyers discovered it and shared it with her; she naturally informed her colleague about it. The memo was sent to UW by Ed Goldman, UM's attorney on the IRB *[Institutional Review Board], of which* Stanley Berent was a member and eventually Chair. It seems unlikely that Berent "knew nothing about its release to other parties," but if he didn't at the time, he certainly knew about it later.

Now, why is Berent so determined not to disclose its contents "outside the IRB," and why does he "not intend to do so now"? He claims he had no part in keeping the memo secret. But when Guyer learned of its existence, he asked Berent for it directly. Berent replied by e-mail that he looked but couldn't find it, but that it wasn't important anyway because no committee decisions were based on it. He did not tell Guyer that its contents *were secret or confidential. Later, how*ever, when Guyer and his lawyer finally sought release of all IRB documents, using the Freedom of Information Act, Berent and the IRB denied that it even existed. So the first reason for Berent's failure to release the memo was that he couldn't find it; next, that it didn't exist; *now, apparently, that he is unable to dis*close anything about it for some mysterious reasons of confidentiality.

Why should this memo have been kept secret from Guyer? Berent may not think it is filled with "false innuendo, malicious insinuations, and outright falsities," but I have read it, and I think that it is. For example, he suggests in the memo, with unctuous concern, that Guyer might have falsely misrepresented himself to his interviewees as being a (clinical) psychologist, which would have been a violation of "state or other laws." This is a serious allegation to make against an attorney, for it is a felony in the state of Michigan to mis*represent oneself as a clinical psychol*ogist and a conviction would be grounds for disbarment—as well as grounds for impugning him as an expert witness. Guyer, who is a lawyer as well as a research psychologist, suspects that Berent *will* not release this document because he knows full well that if he does so, it will subject him to a libel suit.

The larger issue here, however, is the power of IRBs to conduct secret investigations and fail to respond to researchers' requests for information about how decisions were arrived at. When any investigative unit is permitted to operate in the dark, making decisions that affect people's lives and reputations, it will *sooner or later abuse this power.*

As for Berent's research on solvent exposure, of course he is going to claim he is an honorable scientist who is above such venalities as conflict of interest. *It is precisely because all of us feel we are above contamination by conflicts of interest that impartial review boards are crucial.* Naturally Berent believes that his "research yielded important information about solvent exposure," but others are entitled to be skeptical. Berent asserts that he was not hired by CSX and Dow. This is a most disingenuous remark. The funding went to his private consulting corporation in Ann Arbor, which works in alliance with the University of Michigan. According to the *Louisville Courier-Journal*, which conducted a ten-month investigation: "CSX railroad paid more than $170,000 over two years for University of Michigan research that, when published, denied any link between industrial solvents the company's workers used and their previously *diagnosed permanent brain damage.* And while conducting their study, the university researchers—neurologist Dr. James Albers and neuropsychologist Dr. Stanley Berent—worked as paid expert witnesses for law firms representing CSX in lawsuits filed by workers."

The newspaper reported that "more than 600 railroaders in fifteen states had been diagnosed with a form of brain damage known as toxic encephalopathy following heavy exposure to chlorinated hydrocarbon solvents for many years. CSX alone had paid out up to $35 million to 466 current or former workers during the past fifteen years."

Under such circumstances, would *Berent and Albers have felt free to say to* CSX, "Sorry, guys, you paid us a bundle, but our research shows that your solvents were responsible for these workers' medical problems, and we will testify to that effect for the plaintiffs"? I don't think so.

That is the nature of co-optation: It ensnares the most honorable of investigators as well as the most crass. And that is the reason the public should be seriously alarmed that the once-unbreachable firewall between science and industry has been almost completely destroyed.

Today, much research is funded by private industry that has a vested interest in the outcome, and universities themselves are increasingly dependent on commercial sources of revenue for research and other needs. Berent is absolutely correct that he has been "exonerated" by internal investigations at the University of Michigan; "whitewashed" is another term. The University has vested interests to protect in this situation, too.

I apologize for my mistake about Berent's "early retirement." When I wrote that, I was looking at the *Louisville Courier-Journal*'s headline of August 15, 2001: "Key figure in CSX case will retire; Researcher says move not linked to ethics probe."

I should have used the term sent by Berent's department chair to all members of the department, that Berent was "transitioning into a phased retirement," by stepping down as the university's medical school chief psychologist and as director of its neuropsychology division.

# Wiseman Replies to Schwartz

*This is a brief response to "After-Death Communications: A Misleading Critique," by Gary E. Schwartz, Follow-Up column, SKEPTICAL INQUIRER, September/October 2002.*

RICHARD WISEMAN

I am glad to see that Gary Schwartz accepts that his original experiment did indeed contain the various flaws that I outlined in my critique. He does, however, dispute whether such problems could give rise to the apparent accuracy of the mediums' statements. This is an empirical question that can only be settled by carrying out new studies that do not contain the type of sensory leakage and judging artifacts present in his original experiment. Schwartz claims to have recently conducted and published such an experiment (*Journal of the Society for Psychical Research*, 65.4, 257–275). Unfortunately, his paper reveals that this new experiment still contained the potential for judging bias, as the sitters were not blind when assessing the accuracy of the mediums' comments. Until such problems are rectified it will be impossible to judge whether the mediums involved in such studies have paranormal abilities. □


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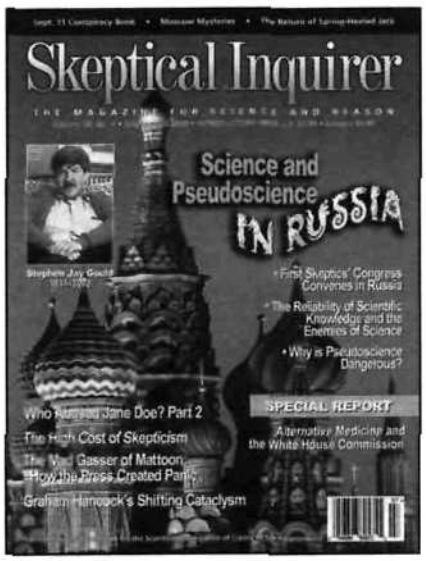
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## Postmortem on Case History

In "Who Abused Jane Doe?" (Conclusion, July/August 2002) the authors perform a detailed review of previous work and expose what appears to be poor workmanship in a case history. It should be no surprise that clinical psychologists and psychiatrists make mistakes. Mistakes are made in every profession.

A critical factor in improving the quality of work done in a profession is being able to locate mistakes. Only when mistakes can be identified can the quality of work be improved.

When a patient dies, a detailed autopsy performed by an independent doctor may discover that an incorrect diagnosis or procedure harmed the patient. From this knowledge the practice of medicine is improved. What Loftus and Guyer have done is similar to performing a postmortem. From a detailed and independent audit of a case history mistakes and poor practices are identified.

Quality is not likely to advance quickly when a profession makes it very hard for poor work to be detected and corrected. To an outsider it seems obvious that clinical psychologists, in the interests of performing quality work, should have independent professionals audit a random sampling of their past cases. Without this, improvements in quality will be slow.

Steve Sullivan
Beaverton, Oregon

Loftus and Guyer offer a case study to assail the issue of memory repression and recovery, ostensibly revealing the weakness of case studies. I do not dispute their research, but wish to point out that readers are no more able to assess the accuracy, balance, and validity of their work than were readers of Corwin's work.

Unfortunately the memory issue was addressed in our adversarial legal system, which polarizes debate and is ill-suited to arriving at moderate or reasonable conclusions, and became inflamed, with first one witch-hunt against sexual abusers, then another in retaliation.

SKEPTICAL INQUIRER's readers may be surprised to learn that "repression" and "memory recovery" have not been discredited. *SI*'s focus otherwise does a disservice to the people involved and to the skeptical community. Repeated investigation has reached conclusions that should surprise no one: Memory of trauma is sometimes forgotten, sometimes not. Memories which have been forgotten are sometimes recovered, sometimes not. Recovered memories are sometimes accurate and reliable, sometimes not. (Check out www.apa.org/pubinfo/mem.html.)

Invalid methods to ascertain memory reliability are unfortunately widespread. I suggest we move discussion to more useful focus. How might *reliable* best be distinguished from *unreliable?* What corroborations constitute sufficiency? What indicators suggest presence or absence of reliability? With this focus, we could meaningfully inform clinical, legal, and lay communities regarding an important subject and truly demonstrate the value of skepticism and rational thought.

Kenneth L. Salzman
Licensed Clinical Psychologist
Lansing, Michigan

## High Cost of Skepticism

I totally agree with Carol Tavris's article "The High Cost of Skepticism" (July/August 2002) in which she expressed grave concern regarding the state of scientific investigation and the "growing institutional barriers to free inquiry." She correctly praises Loftus and Guyer for their courage, persistence, and integrity. I would like to add another three names to her list. Bruce Rind, Robert Bauserman, and Ph.D. candidate Philip Tromovitch were savagely assailed by conservative radio host "Dr. Laura," The Family Research Council, victimologists of all stripes, and even the Congress of the United States (January/February 2000 SI; July/August 2001 SI). The very organization that published their work (after careful and extensive peer review), the American Psychological Association (APA), coming under strong attack by conservative members of Congress for publishing the study, eventually distanced themselves from it by saying they didn't agree with the conclusions of the study, as if science required agreement with traditional attitudes. In order to placate its critics for publishing the study, the APA took the unprecedented step of forwarding it to the prestigious American Association for the Advancement of Science (AAAS) for further review. A panel from the AAAS, after reviewing the study and finding no fault, expressed "grave concerns" in regard to how the Rind study was "politicized and misrepresented" by its critics. The sexual hysteria that is ravaging our country and devastating innocent adults and children with a web of deceit and pseudoscience can only have the ultimate effect of trivializing true sexual abuse by, ironically appropos, "throwing the baby out with the bathwater."

Arthur Pomerantz
Silver Spring, Maryland

The report by Carol Tavris is shocking. It is hard to believe and very saddening when believed. It seemed to me, in the 1950s, when I first became a university faculty member, that one had the right to pursue one's intellectual curiosity wherever it might venture.

I was hired because those most concerned wanted a vigorous lecturer to fill the available opening. If one published, that was gravy. Fortunately I got tenure before the "publish or perish" dictate overtook the university.

Now it appears, since universities are increasingly administered as businesses, that academic freedom is in large measure an antique. To be hired, one must have published. To obtain tenure and advancement one must have research proposals that yield nice grants so that the university can get its cut of the grant money. Intellectual curiosity must be grant-directed.

Tavris reveals there are even more hazards afoot. What next? As for teaching undergraduates, that is left to graduate students! While the Jane Doe Question had no connection to teaching, I can't refrain from noting that the importance of teaching has fallen into the same slough of neglect as has academic freedom. Do we still really have universities, or is this label becoming a misnomer and what we have are glorified technical schools dominated by petty bureaucrats and businessmen? This should be of grave

concern for all pursuers of skeptical inquiry.

Laurence G. Wolf
Cincinnati, Ohio

When Tavris, Loftus, and Guyer express their outrage at the abridgment of the First Amendment free speech rights of the latter two by their respective institutions, they may be falling prey to a common misconception. Their story involves violations of academic freedom, tenure, open inquiry, and institutional due process—but no apparent infraction of the First Amendment.

The First Amendment only addresses suppression of speech by the government. It does not protect you from the actions of private parties, such as your spouse, father-in-law, or boss. As far as the First Amendment is concerned, if your wife tells you to stow it, you'd best buy a muzzle.

That the bosses here were state universities probably makes no difference. Those are usually allowed the latitude of private universities in academic matters. (There's been no ruling on IRBs, so far as I know.)

Thus, the private employer (here, the university) may set the rules in his workplace. He can tell you to shut up or ship out. Your remedies, if any, depend on the common law.

The professors' free speech rights (as defined by contract, university rules, tenure, academic custom, etc.) seem to have been seriously violated. Their First Amendment rights probably were not.

Paul Morgan Fredrix
Los Angeles, California

## Theories and Limits

Yuri N. Efremov ("The Reliability of Scientific Knowledge and the Enemies of Science," July/August 2002) considers philosophers of science like T.S. Kuhn to be enemies of science because they challenge its objectivity and its reliability. The position that all scientific theories are always underdetermined by any raw facts and that it will always be necessary to rely on values when choosing amongst them was first espoused by Pierre Duhem and later popularized by Kuhn. Scientific theories are attempts to describe how the *noumena* (or things-in-themselves, which can never be directly perceived by us) can explain the phenomena that we do perceive. Such theories can never be known to be objectively true because there could always be some other, perhaps radically different, posited *noumena* which not only could also explain the same phenomena but might really be the correct explanation. While science has been incredibly successful, nonetheless, scientists, like all other human beings, must learn to accept the limits of human understanding.

Donald F. Nigroni
Glenolden, Pennsylvania

The statement by Yuri N. Efremov that "new knowledge, if it is true, always includes the old, which appears as a special case of the new theory" simply isn't true. Two examples, the phlogiston theory of the seventeenth century, and the caloric theory of the eighteenth, come immediately to mind. Efremov would surely be hard-pressed to explain how either of these theories, widely accepted by the scientific community at the time, constitute a special case under modern thermodynamic theory.

No doubt, what Efremov has in mind is what happened to classical Newtonian physics in the early twentieth century when it was subsumed under the relativistic physics of Einstein, but it is hardly ever a good policy to base such a sweeping generality as Efremov's on a single example.

Donald C. Wilson
W. Hartford, Connecticut

*Yuri Efremov responds:*

*The letters bring up real problems that I didn't have space to write about in detail in my paper. The example of phlogiston theory is not the only one that seemingly contradicts the assertion that new knowledge, if true, always includes the previous knowledge as a particular case. Copernicus's theory also does not include the Ptolemy planet system as the special case.*

*My suggestion was to consider phlogiston and Ptolemy theories as products of pre-scientific knowledge. I do believe that Copernicus (and later Newton, among others) did not create the revolution in science, yet were the first real scientists. This is not to say Ptolemy was completely wrong—his theory did describe planet motions etc.,—but there was no real physics behind it, just as in the case of phlogiston. Both theories were not even first approximations to reality; they were instead nothing but mathematical models. Thus, Ptolemy's system of the world was something like the image of the mechanical computer, having no relation to reality. There was no real explanation, which always must be part of the general picture, as is the case of all contemporary theories. The first (but far from only) sign that a new theory is wrong is its inability to incorporate the previous theory.*

*As concerns the subjectivity of scientific knowledge, popularized by Kuhn, this impression is mostly connected with misunderstood popular descriptions of scientific work, and even with poor knowledge of scientific results. Some freedom in the selection of facts to be explained exists only during the first attempts to construct a theory. The great thing is the insight and the ability of some scientists to select the problem to which it is possible to turn—for a while—with a blind eye in order to explain the whole picture—yet later on, even these missed things are explained within the framework of the same theory—if it is correct.*

*The achievements of contemporary science (first of all physical theory, cosmology included) are not easy to describe for everyone, even for those who have a solid philosophical education. Quite specialized knowledge is often needed. I suspect that instead of trying to get this knowledge, some philosophers simply claim the scientific result subjective (and then nonessential). Yet even from strange and seemingly abstract theory, things appear that are widely used today, often after many decades. Therefore these theories were right. The theories of Maxwell, Planck, and Einstein are the best examples.*

*Our observational abilities are surely constrained, yet they correspond to our real world. In any moment we are able to see only a small part of the world's construction; we are seeing through a window only, yet this window is getting wider and wider. Our ability to describe and analyze the world correctly has been confirmed by a lot of cases when the abstract theory designed to explain the things quite far from us (like the energy of stars) was found to be suitable to make real things here (such as the hydrogen bomb). . . . Nearly everything we see in our towns was created only because the science correctly—and more and more completely—reflects reality. This is the only reality existing that is common for everybody—except for perhaps the postmodernist pseudo-philosophers.*

*Yuri N. Efremov*
*Sternberg Astronomical Institute*
*Moscow, Russia*

## Placebo Power

How many readers were surprised that "Controlled Study Finds No Efficacy for St. John's Wort in Major Depression" (News & Comment, July/August 2002)?

Both the media and SI ignored, however, a point of greater interest to skeptics—and the medicine-buying public: In the study (*Journal of the American Medical Association* 287 [14]: 1807–1814, April 10, 2002),

neither did the mainstream prescription medication sertraline, a selective serotonin reuptake inhibitor, outperform the placebo.

The study raises possibilities for a new, but proven "nutritional supplement": "Genuine Placebo, clinically tested as effective as sertraline, with no side effects whatsoever. Accept no substitutes."

And that's just one of its uses.

William E. Lee
Portland, Maine

## John Edward's 3.3-Second Disclaimer

As a psychologist and college instructor of a course entitled "Critical Thinking About the Paranormal," I have heard much about John Edward's TV series *Crossing Over* on the Sci Fi channel. Recently I videotaped a couple of episodes and noticed the disclaimer at the end of each show. First, I invite the reader to see how much of it can be read in 3.3 seconds, which is exactly how long the message is displayed. Second, notice the word "producer" is used twice. However, there are no fewer than eleven "producers" mentioned. Third, what a tragedy it is for so many believers to put their faith in Edward and his ilk when all they need to do is read the last three lines (which of course is impossible unless you're a speed reader) and see the words ". . . are not meant or intended to be a form of . . . factual statement in anyway whatsoever."

Four years ago I debated James Van Praagh on a local TV show. It is sad to see bereaved people, who are most vulnerable to charlatans, continue to be deceived by those who make millions.

TV psychic John Edward. Photo: Evan Agostini/ ImageDirect

Bob Baugher, Ph.D.
Department of Psychology
Highline Community College
Des Moines, Washington

## Helder's New Age Notions

Benjamin Radford's piece on Luke Helder (the smiley-face pipe bomber, News & Comment, July/August 2002) strikes me as an

oblique attempt to blame his actions on his New Age beliefs. I hope you'll consider that these crackpot New Age notions are nothing but the organ on which he played his madness. Had these philosophies not been available to him, he might well have planted bombs in the name of some political, social, or religious philosophy.

Russell T. Johnson
russjohn@aristotle.net

*Benjamin Radford responds:*

*Johnson, and at least one other reader, feel that my News & Comment piece somehow implied that New Age beliefs caused Helder's bombing spree. I am well aware of the fallacy of trying to blame an individual's actions on a belief system; in fact I stated quite clearly that "the paranormal cannot be said to have caused Helder's attacks." However in this case it is not I but Helder himself who claims that the bombs were designed to draw attention to his paranormal beliefs. I was simply reporting a facet of the story which had been virtually ignored by the media.*

## Skeptics' Reactions

In the July/August 2002 SKEPTICAL INQUIRER there are four letters about Barry Seidman's review of Robert Sawyer's novel *Calculating God.* Every one of them states that Seidman overreacted to a fiction novel while criticizing it from a skeptical viewpoint. The letter from Sawyer himself ends with:

"Barry Seidman's review . . . it's also part of the shift toward knee-jerk reaction and rhetorical sleight of hand within the skeptical community that is damaging the skeptical movement itself."

Is Sawyer saying something important here? Is the skeptical community becoming reactionary and close-minded? A couple of things come to mind that might contribute to a shift toward reactionary responses. First, how many times must we debunk a ghost story or a psychic or telepathy? After a while, the constant repetition of the same old claims is going to make anyone say, "Another ghost story? It's nonsense." Second, is the ratio of believers to debunkers becoming high enough that debunkers don't have time to deal with all the claims? That also will cause them to say "Sorry, no time today. It's nonsense."

I discussed this issue with fellow skeptics at the James Randi Education Foundation forum and many agreed that these two reactions are becoming more common. I propose that if skeptics, and especially those debunking claims, are tired of a particular genre of claim, or don't have time to deal with it thoroughly, they simply say, "I'm sorry, but I've been over that claim before. I don't have time to do it again." There is no advantage to having an opinion on every claim.

Paul C. Anagnostopoulos
Carlisle, Massachusetts

Having been intrigued by the mini-storm brewed up by Barry Seidman's review of *Calculating God,* along with the subsequent letters to your magazine (July/August 2002), I must say that my initial sympathy was with Robert Sawyer. However, after actually reading the book, I've come to agree more with Seidman's viewpoint. Sawyer gives unabashed credence to all of the creationist assertions (his two hillbillies notwithstanding). What science-based counterviews his human character mentions are offered only half-heartedly. He then goes on to suggest that popular scientists with well-known skeptical views, such as Sagan and Gould, actually secretly held, if not explicit pro-God views, at least had developed serious doubts about their own, long-held skeptical principles. Strangely, Sawyer offers a Borders-related essay on his sfwriter Web site as an indication of his "true" skeptical credentials.

But the essay actually only reinforces the points that Seidman was making. Still in all, I mostly enjoyed the book, up until the rather weak ending. It might have been better to have closed at the point the human and aliens began their trip to visit God, rather than attempt to describe what they found. That would have allowed readers to imagine their own deep and unfathomable discovery. Unfortunately, the ending reminded me of the rather vague and unsatisfying conclusion to *2001: A Space Odyssey.*

John Clinger
Richmond, Virginia.

## Blue Babe a Bison

While I much enjoyed the critique of "Fingerprints of the Gods," (July/August 2002) there was one minor error in the article on page 47.

Blue babe was not a "mammoth," it was an Ice Age bison (*Bison priscus*). Its blue color was due to the mineral vivianite dusting the carcass. The story of Blue babe and other Ice Age animals is told in the book *Frozen Fauna of the Mammoth Steppe: The Story of Blue Babe* by R. Dale Guthrie.

Sheila L. Chambers
sheilach@wave.net

## Jefferson and Hume

The principle that extraordinary claims require extraordinarily strong evidence has been credited to Carl Sagan. This is unfair, according to Shawn Carlson (Letters, May/June 2002), who argues that the honor belongs to Thomas Jefferson, who made a statement implying that principle in 1805. We should not stop there. The principle can be found in a famous essay on miracles by the great Scottish philosopher David Hume. The essay was first published in 1748 as Chapter 10 of his *Enquiry Concerning Human Understanding.* It is still worth reading. The essay is well explained and put in its context in Stephen Buckle's *Hume's Enlightenment Tract* (Oxford University Press, 2001). Jefferson, a man of discriminating taste, admirable intellect, and wide learning—which at that time, did not disqualify him from the presidency—was certainly familiar with Hume's writings, and with Hume's statement: "the wise man proportions his belief to the evidence."

Thomas Mautner
Canberra, A.C.T.
Australia

## Giant Footprints

Whenever I read an account of giant footprints attributed to Sasquatch (Letters, July/August 2002) I have to chuckle, because I'm reminded of a cartoon in "Up Front" by Bill Mauldin. Willy and Joe, the long-suffering heroes of this collection of WWII cartoons, are staring at a set of huge tracks left along a muddy road somewhere in the European war theatre, and the caption is "Footprints! Gawd, what a monster!" Their own combat boots are caked in mud and are about the size of tennis racquets. . . .

Sam Hanson
Douglas City, California

## Quackery, Not Holism

In the discussion of "Holism" (Letters, July/August 2002) an essential point has been overlooked. Proponents of "alternative holistic" practices complain that we should not wait for evidence to be gathered, that we could be denying patients benefits, that some day these methods may be validated.

But the public believes that health professionals use proven treatments, and it constitutes deception to use unvalidated methods without telling the patient.

Treatments used prior to proof are called experiments, and should be so labeled. To use unproven treatments on uninformed patients for money is not holism. It is quackery.

Marvin J. Schissel
Roslyn Heights, New York

## Let's Make ID Inclusive!

If "Intelligent Design" should be forced into your school system, consider this. The whole purpose of the ID movement is to turn departments of science education into eighteenth century schools of "natural theology." However, one strategem of this movement—to slyly not identify the "designer"—leaves the door open to nontheistic "designers." There is Francis Crick's suggestion in his 1981 book, *Life Itself,* of "directed panspermia," a process by which a very advanced civilization has seeded the galaxy with life by sending spaceships loaded with bacteria many places, including Earth.

My own favorite would-be designers are the members of the Raelian "flying saucer" group. Rael, a famous European race car driver, claims he was taken aboard a spacecraft in southern France and recruited by the alien designers of our species to further their work. To that end, Rael formed a group with science degrees in the United States to perfect human cloning. Their testimony during congressional hearings on cloning last year was most colorful. I am a practicing schoolteacher. When I tell some supporters of ID in the classroom about the need to include the Raelians in the lesson plans, their enthusiasm wanes.

John Davis
Jackson, Mississippi

The letters column is a forum for views on matters raised in previous issues. **Letters should be no more than 225 words.** Due to the volume of letters not all can be published. Address letters to Letters to the Editor, SKEPTICAL INQUIRER. Send by mail to 944 Deer Dr. NE, Albuquerque, NM 87122; by fax to 505-828-2080; or by e-mail to letters@csicop.org (include name and address).

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**AUSTRALIA. Canberra Skeptics**, Canberra Australia. Peter Barrett, President. PO Box 555, Civic Square ACT 2608 Australia. **Australian Skeptics Inc.**, Australia. Barry Williams, Executive Officer. Tel. 61-2-9417-2071; e-mail: skeptics@kasm.com.au. PO Box 268, Roseville NSW 2069 Australia. www.skeptics.com.au. **Australian Skeptics**—Hunter Region Newcastle/Hunter Valley. Dr. Colin Keay, President. Tel.: 61-2-49689666; e-mail: bolide@hunterlink.net au. PO Box 166, Waratah NSW 2298. **Australia Darwin Skeptics**, Northern Territory, Australia. Simon Potter, Secretary. Tel.: 61-8-8932-7552; e-mail: dwnskeptic@ais.net.au. PO Box 809, Sanderson NT 0812 Australia. **Gold Coast Skeptics**, Queensland, Australia. Lilian Derrick, Secretary. Tel.: 61-7-5593-1882; e-mail: lmderrick@telstra.easymail.com.au. PO Box 8348, GCMC Bundall QLD 4217 Australia. **Queensland Skeptics Assoc. Inc.** (Qskeptics) Queensland. Bob Bruce, President. Tel.: 61-7-3255-0499; e-mail: qskeptic@uq.net.au. PO Box 6454, Fairview Gardens QLD 4103 Australia. **South Australia Skeptics (SAS)** South Australia. Mr. Laurie Eddie, Secretary. Tel.: 61-8-8272-5881; e-mail: allang@txc.net.au. PO Box 377, Rundle Mall SA 5000 Australia. **Australian Skeptics in Tasmania Inc.**, Tasmania, Australia. Fred Thornett, Secretary. Tel.: 61-3-6234-1458; e-mail: fredthornett@hotmail.com. PO Box 582, North Hobart, TAS 7000 Australia. **Australian Skeptics**—Victorian Branch Victoria. Grant Stevenson, President. Tel.: 61-3-9531-9905; e-mail: contact@skeptics.com.au. GPO Box 5166AA, Melbourne VIC 3001 Australia. www.skeptics.com.au. **WA Skeptics**, Western Australia. Dr. John Happs, President. Tel.: 61-8-9448-8458; e-mail: wa.skeptics@australiamail.com. PO Box 899, Morley, WA 6062 Australia.

**BELGIUM. Comité Belge Pour L'Investigation Scientifique des Phénomènes Réputés Pananormaux Comité Para**, Belgium. J. Dommanget, President of the Committee. E-mail: omer.nys@oma.be. Observatoire Royal Belgique 3, ave. Circulaire B-1180, Brussels, Belgium. www.comitepara.be. **Studiekring voor Kritische Evaluatie van Pseudowetenschap en Paranormale beweringen** (SKEPP) Belgium. Prof. Dr. W. Betz. Tel.: 32-2-477-43-11; e-mail: skepp@skepp.be Laarbeeklaan. 103 B-1090 Brussels, Belgium. www.skepp.be.

**BRAZIL. OPÇAO RACIONAL**, Brazil. Luis Fernando Gutman. Tel.: 55-21-548-2476; e-mail: fernandogutman@hotmail.com. Rua Santa Clara, 431 Bloco 5, Apt. 803, Copacabana-Rio de Janeiro 22041-010 Brazil. www.opcaoracional.com.br.

**BULGARIA. Bulgarian Skeptics**, Bulgaria. Dr. Vladimir Daskalov. E-mail: egoshev@einet.bg. Krakra 22 BG-1504 Sofia, Bulgaria.

**CANADA. Alberta Skeptics**, Alberta. Greg Hart, Chairman. Tel.: 403-215-1440; e-mail: hartg@humaneffort.com. PO Box 5571, Station 'A', Calgary, Alberta T2H 1X9 Canada. http://abskeptics.homestead.com. **Alberta Skeptics, British Columbia Skeptics**, BC and Alberta. Lee Moller. Tel. 604-929-6299; e-mail: leemoller@shaw.ca. 1188 Beaufort Road, N. Vancouver, BC V7G 1R7 Canada. **Ontario Skeptics**, Ontario, Canada. Eric McMillan, Chair. Tel.: 416-425-2451; e-mail: eric@we-compute.com. P.O. Box 53003, 10 Royal Orchard Blvd., Thornhill, ON L3T 7R9 Canada. www.astro.yorku.ca/~mmdr/oskeptics.html. **Toronto Skeptical Inquirers** (TSI) Toronto. Henry Gordon, President. Tel.: 905-771-1615; e-mail: henry_gordon@hotmail.com. 343 Clark Ave., W., Suite 1009, Thornhill, ON L4J 7K5 Canada. **Ottawa Skeptics**, Ottawa, Ontario. Greg Singer. E-mail: skeptic@ottawa.com. PO Box 1237, Station B, Ottawa, Ontario K1P 5R3 Canada.www.admissions.carleton.ca/~addalby/cats/skeptic.html. **Sceptiques du Quebec**, Quebec. Alan Bonnier. Tel.: 514-990-8099. C.P. 202, Succ. Beaubien Montreal, Quebec H2G 3C9 Canada. www.sceptiques.qc.ca. **Skeptics Quinte**, *Bill Broderick. 2262 Shannon Rd. R.R.* 1, Shannonville, ON K0K 3A0; e-mail: broderic@kos.net.

**CHINA. China Association for Science and Technology**, China. Shen Zhenyu Research Center, P.O. Box 8113, Beijing China. **Hong Kong Skeptics**, Hong Kong. Brad Collins, P.O. Box 1010, Shatin Central Post Office, Shatin NT China.

**COSTA RICA. Iniciativa para la Promoción del Pensamiento Crítico** (IPPEC) San Jose. Victor Quiros V. Tel.: 506 275 43 52; e-mail: victorcr@racsa.co.cr. A.P. 1513-1002 Paseo de los Estudiantes San José, Costa Rica. http://webs.demasiado.com/vicr.

**CZECHOSLOVAKIA. Sisyfos-Czech Skeptics Club**. Czech Republic. Ms. Ing. Olga Kracikova, Secretary. Tel.: 420-2-24826691; e-mail: olgakracikova@email.cz. Hastalska 27 Praha 1 110 00 Czech Republic. www.fi.muni.cz/sisyfos/ *(in Czech).*

**DENMARK. Skeptica: Association of Independent Danish Skeptics**, Denmark. Willy Wegner. Tel.: 45-75-64-84-02; e-mail: skeptica@skeptica.dk. Vibevej 7 A DK 8700 Horsens, Denmark. www.skeptica.dk.

**ECUADOR.** Pablo Cevallos Estarellas. Apartado 09-01-5603 Guayaquil, Ecuador.

**ESTONIA Horisont.** Indrek Rohtmets. EE 0102 Tallinn, Narva mnt. 5.

**FINLAND. SKEPSIS**, Finland. Jukka Hakkinen. PO Box 483, Helsinki 00101 Finland.

**FRANCE. AFIS**, AFIS (Association Française pour l'Information Scientifique) France. Jean Bricmont, President. 14 rue de l'Ecole Polytechnique F-75005 Paris, France. **Cercle Zététique**, France. Paul-Eric Blanrue. 12 rue; David Deitz. F-57000 Metz, France. **Laboratoire de Zététique** (laboratory). Professeur Henri Broch. Tel.: 33-0492076312; e-mail: broch@unice.fr. Université de Nice-Sophia Antipolis Faculté des Sciences F-06108 Nice Cedex 2 France. www.unice.fr/zetetique/.

**GERMANY. Gesellschaft zur wissenschaftlichen Unterrsuchung von Parawissenschaften** (GWUP) Germany. Amardeo Sarma, Chairman. Tel.: 49-6154-695023. E-mail: info@gwup.org. Arheilger Weg 11 D-64380 Rossdorf, Germany. www.gwup.org. **European Council of Skeptical Organizations** (ECSO) Europe. Dr. Martin Mahner. Tel.: 49-6154-695023; e-mail: info@ecso.org. Arheilger Weg 11 64380 Rossdorf, Germany. www.ecso.org/.

**HUNGARY. Tényeket Tisztelk Társaságа TTT Hungary.** Prof. Gyula Bencze. Tel.. 36-1-392-2728; e-mail: gbencze@rmki.kfki.hu. *c/o Természet Világa*, PO Box 246 H-1444 Budapest 8 Hungary.

**INDIA. Atheist Centre,** Dr. Vijayam, Executive Director. Benz Circle, Vijayawada 520 010, Andhra Pradesh, India. Tel.: 91 866 472330; Fax: 91 866 473433. E-mail: atheist@vsnl.com. **Maharashtra Andhashraddha Nirmoolan Samiti** (MANS) states of Maharashtra & Goa. Dr. Narendra Dabholkar, Executive President. Tel.: 91-2162-32333; e-mail: ndabholkar@hotmail.com. 155, Sadashiv Peth Satara 415001 India. www.antisuperstition.com. **Indian Rationalist Association**, India. Sanal Edamaruku. E-mail: edamaruku@vsnl.com or IRA@rationalist international.net. 779, Pocket 5, Mayur Vihar 1, New Delhi 110 091 India. Dravidar Kazhagam, southern India. K. Veeramani, Secretary General. Tel.: 9144-5386555; e-mail: periyar@vsnl.com. Periyar Thidal, 50, E.F.K. Sampath Road Vepery, Chennai Tamil Nadu 600 007 India. www.Periyar.org. **Indian CSICOP**, India, B. Premanand, Convenor. Tel.: 091-0422-872423; e-mail: dayamini@md4.vsnl.net.in. 11/7 Chettipalayam Road Podanur Tamilnadu 641 023 India.

**ITALY. Comitato Italiano per il Controllo delle Affermazioni sul Paranormale** (CICAP) Italy. Massimo Polidoro, Executive Director. Tel.: 39-049-686870; e-mail: polidoro@cicap.org. P.O. Box 1117 35100 Padova, Italy. www.cicap.org.

**JAPAN. Japan Anti-Pseudoscience Activities Network** (JAPAN) Japan. Ryutarou Minakami, chairperson. E-mail: skeptic@e-mail.ne.jp. *c/o* Ohta Publishing Company, Epcot Bld, 1F, 22, Arakicho, Shinjuku-ku Tokyo 160-8571 Japan. **Japan Skeptics**, Japan. Dr. Jun Jugaku. E-mail: *jugakujn@cc.nao.ac.jp. Japan Skeptics, Business* Center for Academic Societies, Japan 5-16-9 Honkomagome, Bunkyo-ku Tokyo 113-8622 Japan.

**KAZAKHSTAN. Kazakhstan Commission for the Investigation of the Anomalous Phenomena** (KCIAP) Kazakhstan. Dr. Sergey Efimov, Scientific Secretary. E-mail: efim@afi.south-capital.kz. Astrophysical Institute Kamenskoye Plato Alma-Ata, 480020 Republic of Kazakhstan. Committee for the Scientific Expertise of Claims of the Paranormal (CSECOP).

**KOREA. Korea PseudoScience Awareness** (KOPSA) Korea. Dr. Gun-Il Kang, Director. Tel.: 82-2-393-2734; e-mail: KOPSA@chollian.net. 187-11 Bukahyun-dong, Sudaemun-ku, Seoul 120-190 Korea www.kopsa.or.kr.

**MALTA. Society for Investigating the Credibility of Extraordinary Claims** (SICEC) *Malta. Vanni Pule, Chairman. Tel.: 356-381994;* e-mail: pulevan@vol.net.mt. P.O. Box 31, Hamrun, Malta.

**MEXICO. Mexican Association for Skeptical Research** (SOMIE) Mexico. Mario Mendez-Acosta, Apartado Postal 19-546 D.F. 03900 Mexico.

**NETHERLANDS. Stichting Skepsis**, Netherlands. Rob Nanninga, Secretary. Tel.: 31-50-3129893; e-mail: skepsis@wxs.nl. Westerkade 20, 9718 AS Groningen, Netherlands. www.skepsis.nl.

**NEW ZEALAND. New Zealand Skeptics**, New Zealand, Vicki Hyde, Chair. Tel.: 64-3-384-5136; e-mail: Vicki@spis.co.nz. PO Box 29-492, Christchurch, New Zealand. www.skeptics.org.nz.

**NIGERIA. Nigerian Skeptics Society**, Nigeria. Leo Igwe, Convenor. E-mail: dpc@skannet.com.ng. PO Box 25269, Mapo Ibadan Oyo State, Nigeria.

**NORWAY. SKEPSIS.** Norway St. Olavsgt. 27 N-0166 Oslo, Norway.

**PERU. Comite de Investigaciones de lo Paranormal lo Seudocientifico y lo Irracional CIPSI-PERU**, Lima, Peru. Manuel Abraham Paz-y-Mino. Tel.: +51-1-9215741; e-mail: cipsiperu@yahoo.com. El Corregidor 318 Rimac, Lima 25 Peru. www.geocities.com/cipsiperu.

**POLAND. Polish Skeptics**, Poland. Adam Pietrasiewicz. E-mail: redaktor@iname.com. www.biuletynsceptyczny.z.pl.

**PORTUGAL. Associaçao Cépticos de Portugal (CEPO)** Portugal. Ludwig Krippahl. E-mail: cepo@interacesso.pt. Apartado 334 2676-901 Odivelas, Portugal. http://cepo.interacesso.pt.

**RUSSIA.** Dr. Valerii A. Kuvakin. Tel.: 95-718-2178; e-mail: V.KUVAKIN@MTU-NET.RU. Vorob'evy Gory, Moscow State University, Phil. Dept. Moscow 119899 Russia. http://log.philos.msu.ru/rhs/index/htm.

**SINGAPORE. Singapore Skeptics.** Contact: Ronald Ng. E-mail: ronaldng@iname.com. www.skeptic.iwarp.com.

**SLOVAK REPUBLIC** (SACT). Slovak Republic. Igor Kapisinsky Pavla Horova, 10 Bratislava 841 07 Slovak Republic.

**SOUTH AFRICA.** Marian Laserson. P.O. Box 46212, Orange Grove 2119 South Africa. **SOCRATES. South Africa. Cape Skeptics**, Cape Town. Dr. Leon Retief. Tel.: 27-21-9131434; e-mail: leonr@iafrica.com. 5N Agapanthus Avenue, Welgedacht Bellville 7530 South Africa.

**SPAIN. El Investigador Esceptico**, Spain. Felix Ares de Blas Gámez/Ares/Martinez, P.O. Box 904, Donostia-San Sebastian 20080 Spain. **ARP-Sociedad para el Avance del Pensamiento Crítico** ARP-SAPC Spain. Sergio López, Borgoñoz. Tel.: 34-933-010220; e-mail: arp@arp-sapc.org. Apartado de Correos, 310 E-08860 Castelldefels, Spain. www.arp-sapc.org.

**SWEDEN. Swedish Skeptics**, Sweden. Dan Larhammar, professor chairperson. Tel.: 46-18-4714173; e-mail: vetfolk@physto.se. Medical Pharmacology BMC, Box 593, Uppsala 751 24 Sweden. www.physto.se/~vetfolk/index.html.

**TAIWAN. Taiwan Skeptics**, Taiwan. Tim Holmes, PO Box 195, Tanzu, Taiwan Perspective.

**UNITED KINGDOM.** *The Skeptic* Magazine, United Kingdom. Toby Howard. E-mail: toby@cs.man.ac.uk. P.O. Box 475 Manchester M60 2TH United Kingdom.

**VENEZUELA. La Asociación Racional y Escéptica de Venezuela** (A.R.E.V.), Guido David Nuñez *Mujica, 10th Street, 13th av. corner, Mini centro* comercial Oasis, Valera, Trujillo state, Venezuela. Web site: www.geocities.com/escepticosvenezuela.

## United States

**ALABAMA. Alabama Skeptics**, Alabama. Emory Kimbrough. Tel.: 205-759-2624. 3550 Watermelon Road, Apt. 28A, Northport, AL 35476 US. **Skeptics-Freethought Forum of Alabama**. Skeptics Freethought Forum, Richard Rich, 1801 Beech St. SE, Decatur, AL 35601-3511 US. E-mail: rrbama66@hotmail.com.

**ARIZONA. Tucson Skeptics Inc.** Tucson, AZ. James McGaha. E-mail: JMCGAHA@PimaCC.Pima.EDU. 5100 N. Sabino Foothills Dr., Tucson, AZ 85715 US. **Phoenix Skeptics**, Phoenix, AZ. Michael Stackpole, P.O. Box 60333, Phoenix, AZ 85082 US.

**CALIFORNIA. Sacramento Organization for Rational Thinking** (SORT) Sacramento, CA. Ray Spangenburg, co-founder. Tel.: 916-978-0321; e-mail: kitray@quiknet.com. PO Box 2215, Carmichael, CA 95609-2215 US. www.quiknet.com/~kitray/index1.html. **Bay Area Skeptics** (BAS) San Francisco—Bay Area. Tully McCarroll, Chair. Tel.: 415 927-1548; e-mail: tullyann@pacbell.net. PO Box 2443 Castro Valley, CA 94546-0443 US. www.BASkeptics.org. **Sacramento Skeptics Society**, Sacramento. Terry Sandbek, President. 4300 Auburn Blvd. Suite 206, Sacramento CA 95841. Tel.: 916 489-1774. E-mail: terry@sandbeck.com. http://my.ispchannel.com/~tsandbek/Skeptics/skeptics.htm. **San Diego Association for Rational Inquiry** (SDARI) President: Todd Rockhold. Tel.: (Todd's personal phone) 760 943-8977. Web site: www.sdari.org. E-mail: info@sdari.org. PO Box 623, La Jolla, CA 92038-0623.

**COLORADO. Rocky Mountain Skeptics** (RMS) Colo., Wyo., Utah, Mont. Béla Scheiber, President. Tel.: 303-444-7537; e-mail: rmscentral@mindspring.com. PO Box 7277, Boulder, CO 80306 US. http://bcn.boulder.co.us/community/rms.

**CONNECTICUT. New England Skeptical Society** (NESS) New England. Steven Novella MD, President. Tel.: 203-281-6277; e-mail: board@theness.com. PO Box 185526, Hamden, CT 06518-5526 US. www.theness.com.

**D.C./MARYLAND. National Capital Area Skeptics** NCAS, Maryland, D.C., Virginia. D.W. "Chip" Denman. Tel.: 301-587-3827. e-mail: ncas@ncas.org. PO Box 8428, Silver Spring, MD 20907-8428 US. http://www.ncas.org.

**FLORIDA. Tampa Bay Skeptics** (TBS) Tampa Bay, Florida. Gary Posner, Executive Director. Tel.. 813-584-0603; e-mail: tbskep@aol.com. 5319 Archstone Dr. #102, Tampa, FL 33634 US. http://members.aol.com/tbskep.

**GEORGIA. Georgia Skeptics** (GS) Georgia. Rebecca Long, President. Tel.: 770-493-6857; e-mail: arlong@hcrc.org. 2277 Winding Woods Dr., Tucker, GA 30084 US.

**IOWA. Central Iowa Skeptics** (CIS) Central Iowa, Rob Beeston. Tel.: 515-285-0622; e-mail: ciskeptics@hotmail.com. 5602 SW 2nd St. Des Moines, IA 50315 US. www.skepticweb.com.

**ILLINOIS. Rational Examination Association of Lincoln Land** (REALL) Illinois. David Bloomberg, Chairman. Tel.: 217-726-5354; e-mail: chairman@reall.org. PO Box 20302, Springfield, IL 62708 US. www.reall.org.

**KENTUCKY. Kentucky Assn. of Science Educators and Skeptics** (KASES) Kentucky. Prof. Robert Baker, 3495 Castleton Way, North Lexington, KY 40502 US. Contact Fred Bach at e-mail: fredwbach@yahoo.com.

**LOUISIANA. Baton Rouge Proponents of Rational Inquiry and Scientific Methods** (BR-PRISM) Louisiana. Marge Schroth. Tel.: 225-766-4747. 425 Carriage Way, Baton Rouge, LA 70808 US.

**MICHIGAN. Great Lakes Skeptics** (GLS) SE Michigan. Lorna J. Simmons, Contact person. Tel.: 734-525-5731; e-mail: Skeptic31@aol.com. 31710 Cowan Road, Apt. 103, Westland, MI 48185-2366 US. **Tri-Cities Skeptics**, Michigan. Gary Barker. Tel.: 517-799-4502; e-mail: barkerg@svol.org. 3596 Butternut St., Saginaw, MI 48604 US.

**MINNESOTA. St. Kloud Extraordinary Claim Psychic Teaching Investigating Community** (SKEPTIC) St. Cloud, Minnesota. Jerry Mertens. Tel.: 320-255-2138, e-mail: gmertens@stcloudstate.edu. Jerry Mertens, Psychology Department, 720 4th Ave. S, St. Cloud State University, St. Cloud, MN 56301 US.

**MISSOURI. Gateway Skeptics**, Missouri, Steve Best, 6943 Amherst Ave., University City, MO 63130 US. **Kansas City Committee for Skeptical Inquiry**, Missouri. Verle Muhrer, United Labor Bldg., 6301 Rockhill Road, Suite 412 Kansas City, MO 64131 US.

**NEBRASKA. REASON (Rationalists, Empiracists and Skeptics of Nebraska)**, Chris Peters, PO Box 24358, Omaha, NE 68134; e-mail: reason01@hotmail.com; Web page: www.reason.ws.

**NEVADA. Skeptics of Las Vegas**, (SOLV) PO Box 530392, Henderson, NV 89053-0392. E-mail: rbanderson@skepticslv.org. Web site: www.skepticslv.org./.

**NEW MEXICO. New Mexicans for Science and Reason** (NMSR) New Mexico. David E. Thomas, President. Tel.: 505-869-9250; e-mail: nmsrdave@swcp.com. PO Box 1017, Peralta, NM 87042 US. www.nmsr.org.

**NEW YORK. New York Area Skeptics** (NYASk) metropolitan NY area. Ted W. Debiak, President. Tel.: 516-735-8739; e-mail: info@nyask.com. 57 South Windhorst Ave., Bethpage, NY 11714-4931 US. www.nyask.com. **Inquiring Skeptics of Upper New York** (ISUNY) Upper New York. Michael Sofka, 8 Providence St., Albany, NY 12203 US. **Central New York Skeptics** (CNY Skeptics) Syracuse. Lisa Goodlin, President. Tel: 315 446-3068; e-mail: imacshiva@syracusenet.net. 201 Milnor Ave., Syracuse, NY 13224 US.

**NORTH CAROLINA. Carolina Skeptics** North Carolina. Eric Carlson, President. Tel.: 336-758-4994; e-mail: ecarlson@wfu.edu. Physics Department, Wake Forest University, Winston-Salem, NC 27109 US. www.carolinaskeptics.org.

**OHIO. Central Ohioans for Rational Inquiry** (CORI) Central Ohio. Charlie Hazlett, President. Tel.: 614-878-2742; e-mail: charlie@hazlett.net. PO Box 282069, Columbus OH 43228 US. **South Shore Skeptics** (SSS) Cleveland and counties. Jim Kutz. Tel.: 440 942-5543; e-mail: jimkutz@earthlink.net. PO Box 5083, Cleveland, OH 44101 US. www.southshoreskeptics.org/.

**Association for Rational Thought** (ART) Cincinnati. Roy Auerbach, president. Tel: 513-731-2774, e-mail: raa@cinci.rr.com. PO Box 12896, Cincinnati, OH 45212 US. www.cincinnatiskepticsorg.

**OREGON. Oregonians for Rationality** (O4R) Oregon. Dave Chapman, President. Tel.: 503 292-2146; e-mail: dchapman@iccom.com. 7555 Spring Valley Rd. NW, Salem, OR 97304 US. www.o4r.org.

**PENNSYLVANIA. Paranormal Investigating Committee of Pittsburgh** (PICP) Pittsburgh PA. Richard Busch, Chairman. Tel.: 412-366-1000; e-mail: mindful@telerama.com. 8209 Thompson Run Rd., Pittsburgh, PA 15237 US. **Philadelphia Association for Critical Thinking** (PhACT), much of Pennsylvania. Eric Krieg, President. Tel.: 215-885-2089; e-mail: eric@phact.org. PO Box 1131, North Wales, PA 19454 US. www.phact.org/phact.

**TENNESEE. Rationalists of East Tennessee,** East Tennessee. Carl Ledenbecker. Tel.: 865-982-8687; e-mail: Aletall@aol.com. 2123 Stonybrook Rd., Louisville, TN 37777 US.

**TEXAS. North Texas Skeptics NTS Dallas/Ft Worth area**, John Blanton, Secretary. Tel.: 972-306-3187; e-mail: skeptic@ntskeptics.org. PO Box 111794, Carrollton, TX 75011-1794 US. www.ntskeptics.org.

**VIRGINIA. Science & Reason**, Hampton Rds., Virginia. Lawrence Weinstein, Old Dominion Univ.-Physics Dept., Norfolk, VA 23529 US.

**WASHINGTON. Society for Sensible Explanations**, Western Washington. Tad Cook, Secretary. E-mail: k7vvv@arrl.net. PO Box 45792, Seattle, WA 98145-0792 US. http://seattleskeptics.org.

The organizations listed above have aims similar to those of CSICOP but are independent and autonomous. Representatives of these organizations cannot speak on behalf of the CSICOP. Please send updates to Béla Scheiber, PO Box 4482, Boulder, CO 80306.

## SCIENTIFIC AND TECHNICAL CONSULTANTS

**George Agogino,** Dept. of Anthropology, Eastern New Mexico University
**Gary Bauslaugh,** educational consultant, Center for Curriculum, Transfer and Technology, Victoria, B.C., Canada
**Richard E. Berendzen,** astronomer, Washington, D.C.
**Martin Bridgstock,** lecturer, School of Science, Griffith University, Brisbane, Australia
**Richard Busch,** magician/mentalist, Pittsburgh, Penn.
**Shawn Carlson,** Society for Amateur Scientists, East Greenwich, RI
**Roger B. Culver,** professor of astronomy, Colorado State Univ.
**Felix Ares de Blas,** professor of computer science, University of Basque, San Sebastian, Spain
**Michael R. Dennett,** writer, investigator, Federal Way, Washington
**Sid Deutsch,** consultant, Sarasota, Fla.
**J. Dommanget,** astronomer, Royale Observatory, Brussels, Belgium
**Nahum J. Duker,** assistant professor of pathology, Temple University
**Barbara Eisenstadt,** psychologist, educator, clinician, East Greenbush, N.Y.
**William Evans,** professor of communication, Georgia State University
**John F. Fischer,** forensic analyst, Orlando, Fla.
**Robert E. Funk,** anthropologist, New York State Museum & Science Service
**Eileen Gambrill,** professor of social welfare, University of California at Berkeley
**Sylvio Garattini,** director, Mario Negri Pharmacology Institute, Milan, Italy
**Laurie Godfrey,** anthropologist, University of Massachusetts
**Gerald Goldin,** mathematician, Rutgers University, New Jersey
**Donald Goldsmith,** astronomer; president, Interstellar Media
**Alan Hale,** astronomer, Southwest Institute for Space Research, Alamogordo, New Mexico
**Clyde F. Herreid,** professor of biology, SUNY, Buffalo
**Terence M. Hines,** professor of psychology, Pace University, Pleasantville, N.Y.
**Michael Hutchinson,** author; SKEPTICAL INQUIRER representative, Europe
**Philip A. Ianna,** assoc. professor of astronomy, Univ. of Virginia
**William Jarvis,** professor of health promotion and public health, Loma Linda University, School of Public Health
**I. W. Kelly,** professor of psychology, University of Saskatchewan
**Richard H. Lange,** M.D., Mohawk Valley Physician Health Plan, Schenectady, N.Y.
**Gerald A. Larue,** professor of biblical history and archaeology, University of So. California.
**William M. London,** consumer advocate, Fort Lee, New Jersey
**Rebecca Long,** nuclear engineer, president of Georgia Council Against Health Fraud, Atlanta, Ga.
**Thomas R. McDonough,** lecturer in engineering, Caltech, and SETI Coordinator of the Planetary Society
**James E. McGaha,** Major, USAF; pilot
**Joel A. Moskowitz,** director of medical psychiatry, Calabasas Mental Health Services, Los Angeles.
**Jan Willem Nienhuys,** mathematician, Univ. of Eindhoven, the Netherlands
**John W. Patterson,** professor of materials science and engineering, Iowa State University
**James Pomerantz,** Provost, and professor of cognitive and linguistic sciences, Brown Univ.
**Gary P. Posner,** M.D., Tampa, Fla.
**Daisie Radner,** professor of philosophy, SUNY, Buffalo
**Michael Radner,** professor of philosophy, McMaster University, Hamilton, Ontario, Canada
**Robert H. Romer,** professor of physics, Amherst College
**Karl Sabbagh,** journalist, Richmond, Surrey, England
**Robert J. Samp,** assistant professor of education and medicine, University of Wisconsin-Madison
**Steven D. Schafersman,** asst. professor of geology, Miami Univ., Ohio
**Béla Scheiber,*** systems analyst, Boulder, Colo.
**Chris Scott,** statistician, London, England
**Stuart D. Scott, Jr.,** associate professor of anthropology, SUNY, Buffalo
**Erwin M. Segal,** professor of psychology, SUNY, Buffalo
**Carla Selby,** anthropologist/archaeologist
**Steven N. Shore,** professor and chair, Dept. of Physics and Astronomy, Indiana Univ. South Bend
**Waclaw Szybalski,** professor, McArdle Laboratory, University of Wisconsin-Madison
**Ernest H. Taves,** psychoanalyst, Cambridge, Mass.
**Sarah G. Thomason,** professor of linguistics, University of Pittsburgh
**Tim Trachet,** journalist and science writer, honorary chairman of SKEPP, Belgium

*Member, CSICOP Executive Council
°Associate Member, CSICOP Executive Council

## CENTERS FOR INQUIRY

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Los Angeles, CA 90027
Tel.: (323) 666-9797

**METRO NEW YORK**
Walnut and Green, 89 Walnut Street
Montclair, NJ 07042
Tel.: (973) 655-9556

**FRANCE**
Prof. Henri Broch,
Universite of Nice
Faculté des Sciences
Parc Valrose, 06108
Nice cedex 2. France
www.unice.fr/zetetics/

**PERU**
D. Casanova 430, Lima 14, Peru

**EUROPE**
Dr. Martin Mahner
Arheilger Weg 11, D-64380 Rossdorf, Germany
Tel.: +49 6154 695023

**MOSCOW**
Professor Valerii A. Kuvakin
119899 Russia, Moscow, Vorobevy Gory,
Moscow State University,
Philosophy Department

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A nearly perfect ring of hot, blue stars pinwheels about the yellow nucleus of an unusual galaxy known as Hoag's Object. This image from NASA's Hubble Space Telescope captures a face-on view of the galaxy's ring of stars, revealing more detail than any existing photo of this object. The image may help astronomers unravel clues on how such strange objects form.

Credits: *NASA and the Hubble Heritage Team* (STScI/AURA)

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